PHYSIOLOGICAL PYRETOLOGY;

OR,

A TREATISE ON FEVERS:

ACCORDING TO THE PRINCIPLES

OF THE

NEW MEDICAL DOCTRINE.

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OF CHALONS.

Novi veteribus non opponendi, sed quoad fieri potest, perpetuo jungendi fœdere.—BAGLIVI.

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TRANSLATED
BY J. R. KNOX, M. D.

PREFACE.

To dissipate the prejudices entertained by some physicians against the application of pathological anatomy and physiology to the investigation of the seat and nature of fevers; to contribute to the dissemination of truths, the value of which can no longer be contested, since they have given rise to a more rational, and, what is of greater importance, a more efficacious treatment of these diseases; to show that, if the French medical doctrine is new, when considered as a system, it can, nevertheless, appeal in attestation of its truth to the authority of past ages, and even to the experience of its adversaries; finally, to reduce within the limits of observation, principles which have been generalized with too much boldness. Such were the objects which I proposed to myself in the publication of this work, which first appeared in 1823.

This edition has received numerous additions, which principally refer to the anatomical researches recently made, with a view to throw light on the nature and seat of various fevers, to quarantines, and the epidemics of the Morea and Gibraltar. In consequence of the employment of a smaller type, the size of the volume has not been increased.

Having been induced by the continued favour of the public, to believe that this work had not been devoid of utility, the only reward which a scientific author can

propose to himself, I undertook to publish a work of greater extent, in which I applied to pathology * in general, the method and principles by which I had conducted my researches on fevers.

I do not aspire to the celebrity of a reformer; my object is simply to offer students and practitioners, who have not an opportunity of following the progress of medical discovery, a faithful exposition of the present state of the science of disease, in reference to diagnosis and treatment. The observations of the ancients and moderns have furnished the elements of this work, which is designed as an introduction to that attentive and profound study of the science and art of curing, which it is the duty of every physician to prosecute.

Paris, November 27th, 1830.

* Nosographie Organique ou Traité complet de Medicine. Paris, 1828, 1830, 4 vols. in 8vo.; chez J. B. Ballière.

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GENERAL PRINCIPLES

OF

PHYSIOLOGY AND PATHOLOGY.

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1. *Of Life and Organization.*

1. Life is the mode of existence and action peculiar to organized bodies.

2. Organized bodies are composed of parts, of which each acts in a special manner for its own preservation, and for that of the whole. The most simple appear to consist only of a kind of cellular membrane. At the head of the most complicated is Man.

2. *Of the Human Body.*

3. Man presents to the immediate action of the bodies which surround him, or which penetrate into his cavities, only an excitable absorbent and exhalent tissue.

4. The external portion of this tissue is in contact with the air and light, caloric, electricity—substances

disseminated through the atmosphere—liquids, surrounding solids, and certain living tissues. It comprehends the skin, the conjunctiva, the membrane which invests the external auditory canal and the tympanum, the naso-buccal mucous membrane, and that which covers the organs of generation.

5. The internal portion of this tissue comprehends the laryngo-bronchial mucous membrane, which receives the impression of the air, of the imponderable agents of substances mingled with the atmosphere; the pharyngo-intestinal mucous membrane subjected to the action of food, medicines and poisons, which pass over it and which it introduces into the organism, either in whole or in part; the mucous membrane of the urinary passages, and, finally, the internal membrane of the uterus.

6. These two portions of tissue which form the surface of the body, are continuous one with the other: where one terminates, the other commences. Their structure is not every where the same, but it does not vary sufficiently in the different points of their extent to cast any doubt upon their analogy.

7. Besides the mucous membranes, there are others which are better entitled to the name of internal, since they are never in contact with external agents in a state of health: these are the serous and synovial membranes; thin and diaphanous in structure, and intimately related in action to the mucous membranes, and still more so to the skin, the functions of which they partly supply.

8. In the interstices of all these membranes are found canals, which carry the chyle, the lymph, the black and red blood, called the chyliferous and the lymphatic vessels, and the blood-vessels, comprehending the veins and arteries.

9. In connexion with the blood-vessels are found, the

heart, which receives from the body the black blood, and sends out to it the red blood; and the lungs which receive the black blood from the heart and send to it the red. At the extremity of the arteries are the secretory organs, such as the cutaneous cryptæ, the mucous follicles, and the glands,—organs which open on the surface of the mucous membranes or the skin, by canals carrying liquids, of which some are destined for assimilation and generation, and others are to be eliminated from the animal economy. The thymus gland, the capsulæ renales, and the spleen are also situated along the course of the blood-vessels, although their functions are not exactly understood.

10. Along the course of the lymphatic vessels are found the glands of the same name, the use of which is unknown, whatever may be the opinion of most physiologists on this subject. In like manner we find along the course of the chyliferous vessels the mesenteric glands, the use of which are equally unknown.

11. At the centre of the human body are found the cerebro-spinal and ganglionic nervous systems, which communicate with each other and with the heart, the lungs, the skin, the mucous membrane, the secretory organs, the vascular glands and the vessels, and establish a communication among all these parts.

12. On the confines of the skin and the mucous membranes and at the peripheral extremities of the nerves, are found the organs of sense and those of locomotion, all of which are intimately connected with the cerebrospinal system by the nerves, and with the heart by the vessels. We may regard the organs of sense as possessing an affinity with the mucous membranes, since they also have relations with the surrounding bodies and equally transmit impressions to the nervous centres.

14. The soft permeable mass, traversed in every direction by delicate vessels situated between the skin, the mucous, and the serous membranes, in the interstices of the viscera, and the muscles, and entering as an integral part into the membranes, the viscera, the muscles and the bones themselves, has received the name of cellular tissue.

15. The human body is then formed of diverse parts called organs, connected by vessels and nerves, and communicating with external bodies through the intermediacy of a membrane likewise formed of very important organs continuous with one another.

16. The organs derive their nourishment.from appropriating to themselves the red blood which is prepared by the pharyngo-intestinal mucous membrane, the chyliferous vessels, and the lungs, and which is conveyed to them by the arteries.

17. The red blood, and perhaps the black, furnish the materials from which the organs elaborate all the fluids except the chyle.

3. *Of Organic Action.*

18. The ancients, in comparing life to a circle, gave a sufficiently just idea of organic action, since there is neither any known point of departure nor any complete interruption.

19. Organs, possessing from their connexion, a reciprocity of action, and penetrated by blood, upon which they act, and which serves for their maintenance; air, caloric, light, electricity, food and drink, sexual and solid relations, and the known conditions of the existence and reproduction of the human species.

20. The solids are the first to feel the influence of surrounding bodies, which they transmit to each other, and to the blood and fluids which they contain.

21. Organic tissues are not all equally exposed to the impression of external agents: this action is first sustained by some point of the surface and only intermediately by the rest of the economy.

22. The air by the diverse modifications which it undergoes, acts upon the skin, the conjunctiva, the membrane which externally covers the tympanum; upon the naso-buccal mucous membrane, and the teeth, and finally, upon the membrane which covers the larynx, the trachea, the bronchia, and their ultimate ramifications. Its influence is first felt by the vessels and nerves which cover these different parts. It powerfully modifies the lungs and the blood, and, consequently, the rest of the economy. The ancients regarded it as the aliment of life. We are but little informed with regard to its direct influence upon the pharyngo-intestinal mucous membrane. Set in motion by the vibrations of sonorous bodies, it acts through the intermediacy of the tympanum, upon the ramifications of the acoustic nerve. Charged with odoriferous particles, it operates upon the olfactory nerves spread upon the pituitary membrane. Light acts upon the skin, penetrates into the eye, and having undergone various refractions, falls upon the retina. The other imponderable agents act in the first place, only on the surface of the body, and have but a secondary action upon the internal parts.

23. Alimentary substances act not only upon the lips, the tongue, the teeth, the gums, and the membrane of the mouth, but also upon that of the pharynx and œsophagus; having reached the stomach, they there under-

go important changes in consequence of their action upon the lining membrane of this viscus; they then enter the duodenum, whence they pass into the other intestines, losing at each instant some of their principles and recovering others, until finally their *debris* arrives at the rectum and is expelled. During this passage, a powerful action is exercised upon the whole extent of the pharyngo-intestinal membrane, all the nerves and vessels of which are successively brought into play.

24. All the modifiers of the organism act then, in the first place, only upon a point of the external or internal surface of the body.

25. If the impression of these agents is feeble, or, if the tissue upon which they act, possesses but little excitability, it is confined to the tissue which receives it, and produces a modification purely local, often inappreciable in its results, and imperceptible even to the individual.

26. If, on the contrary, this impression is strong, or, if the tissue is very excitable, its influence is felt more or less remotely, extending from organ to organ, in such a manner that all are called into play by the action of a single one.

27. The action and reaction of organs constitute what is called the functions.

28. Functions are executed by perceptible movements in the living tissues, and probably by movements in their molecules. The latter movements are designated by the name of *living chemistry*, a denomination altogether improper, and that of *molecular organic action*, a preferable appellation, since it supposes nothing but the action itself, which cannot be contested.

29. The investigation of the essential cause of organic action, of the vital principle, is destitute of utility,

and may in practice prove prejudicial: it is the philo-
sopher's stone of physiology.

4. *Of Excitability.*

30. A property, common to all living bodies, is exci-
tability, which may be defined the aptitude of an orga-
nic body to enter into action, in consequence of impres-
sions exercised upon it, or which the parts composing it
exercise upon one another.

31. If all the parts of living bodies had the same struc-
ture and the same action, excitability would be every
where the same;—this is probably the case in beings,
who appear to be formed of a single tissue; but since in
every living body, composed of several organs, the tex-
ture and the action, although analogous, are different in
the different parts, excitability must likewise differ.

32. Does this property vary only in degree, in each
organ, considered in an isolated manner?

33. Does this property differ only in degree in the
different organs compared with each other?

34. If excitability varies in any other manner than in
degree in each organ, there must be as many species of
excitability, as there are organic modifications, and con-
sequently there would be no excitability in the sense
which we attach to this word. If excitability varied
otherwise than in degree, in the different organs, com-
pared with one another, each organ would be a being,
having, in rigorous language, a proper life, in one word,
an animal; and the reproach which has been cast upon
Bordeu, would be unfounded. If this celebrated phy-
sician has seen, that vital action varies in the different
organs, no one has proved better than he to what point

they depend upon one another. It is the organic action that varies; excitability being but an aptitude, can only vary in the greater or less degree of its developments. The individual disposition, natural or acquired, renders the organs more or less excitable by certain stimulations.

35. General or partial locomotion is the result of contractions, strong or feeble, slow or rapid, permanent or transient, or alternate—What has been called a *perversion of muscular movement* is either a rapid alternation of contractions and relaxations, (clonic spasm,) or an excessive or permanent contraction, (tonic spasm.) Muscular contraction varies then only by being increased or diminished.

36. The circulatory movement undergoes no other modifications than those of weakness or slowness, of excess of force, and of quickness. Palpitations are only strong or hurried contractions, sometimes alternations, with feeble or slow contractions.

37. The relation that subsists between the sensations and the external agents ceases: 1st, When the part of the organ charged with the transmission of the stimulus and with its application to the nerves of this organ, refuses to transmit it, or alters it; 2dly, When the encephalon and the nerve do not communicate, or when the communication of the nerve with the nervous surface, which receives the impression, has been destroyed. 3dly, When the excitability of this surface, or of the brain itself, being increased or diminished, the impression is too weak or too strong, too powerfully, too permanently, or too weakly transmitted or perceived. 4thly, When the movements of the organs are irregular, abnormal. Thus, pressure upon the ball of the eye produces double vision: the eye perceives a black spot which

has no existence, when the retina becomes insensible in part of its extent.—If, on the contrary, the excitability of this nervous expansion be exalted, the luminous rays which ordinarily are not visible, appear distinctly, and we then perceive the red, the violet, and other rays, which are not seen in the ordinary state of the eye. Hearing is lost when the Eustachian tube is obliterated, when the auditory nerve has lost its excitability, or when its communication with the brain is interrupted.   We continue to hear sounds after they have ceased, when they have struck the ear for a long time, violently, or under circumstances that have greatly exalted the cerebral excitability.   A ball held between two fingers, which are crossed, gives the sensation of two balls.   A body, whose temperature is considerably elevated, appears cold, when applied to an inflamed part of the skin. It is in consequence of an excess of excitability in the olfactory nerves, that we must attribute the pleasure which pregnant or hysterical women derive from inhaling fetid odours, and the aversion they manifest for agreeable ones.   It is owing to great irritability of the nerves of taste that chlorotic girls and pregnant women relish substances which appear totally devoid of taste. Finally, the genital organs, fatigued by frequent excesses, sometimes experience agreeable sensations from the application of stimulants, which, under other circumstances, would be productive of pain.

38. On a first view, nothing would appear more remotely separated than pleasure and pain, yet, pleasure, when it is carried to a certain point, becomes painful; and, on the other hand, there are pains which are not devoid of pleasure; this remark has been justly made by Plato: the fact is entirely referrible to the agreeable or

painful perception which pertains to diverse degrees of organic sur-excitation.

39. If we examine the results of nutrition, we shall find that it is in fault, either through excess or defect, when an organ exceeds or falls short of its ordinary volume.

40. If a tissue becomes, either in whole, or in part, similar to another, it is owing most frequently to an exaltation, though sometimes to a diminution, of its nutritive action. Thus, we find it assuming the aspect of a tissue, more or less excitable than itself. A broken bone becomes soft and cellular at its extremities, by the inflammatory process developed in its fragments, which do not become firmly united until after the inflammation has ceased. When it extends to the periosteum and the adjacent muscles, and persists in these tissues, their excitability declines, and, owing to the atony which results, their ossification takes place.*

41. It is in consequence of the prolonged exaltation or depression of vital action, that is to say, under the influence of pain and an afflux of blood, or of insensibility and slowness of the circulation, or, finally, of an alternation of these two opposite states of the nutritive action, that accidental tissues, without analogy in the human system, develop themselves.

42. The result of the variations of the nutritive action, is the predominance in the subtraction of one or more elements of the diseased organic tissue, or the conveyance to it, of elements which do not belong to it in its normal condition: to this source are to be referred the perversions of nutrition.

43. Sympathetic action, being the result of the con-

* Journal Universal des Science Medicales, tome viii.

nexion established between the organs by the nerves and
the vessels, the nervous action and the circulatory move-
ment, cannot be perverted: sympathies can only be more
or less active; the functional connexion which exists be-
tween two organs can never be perverted, except as it
becomes too intimate, or the reverse, or as it occurs be-
tween certain organs of the economy rather than others.

44. What has been said of the nerves distributed to
the organs of sense, and the muscles, may be applied to
the ganglionic system, as far as is possible, at a period
when so much remains to be investigated with regard to
the action of the nervous system.

45. The brain does not appear to be a simple organ,
it is rather a system of organs: but for a long time to
come, we shall have to regard it as we have hitherto
done, as the centre of all the sensations, and the point
of departure of all the volitions and of many movements.
Consequently, what has been asserted of movements and
sensations, is applicable to it. There exists, in like man-
ner, a higher or lower degree of memory, imagination or
judgment: these faculties are exalted, diminished, or
annihilated, in disease. They are said to be pervert-
ed when the mind remains too long fixed upon a single
subject, in reminiscences without appreciable cause,
in hallucinations, in those cases in which the ideas are
no longer connected, or the judgments do not corres-
pond with the ideas and impressions, where there are
desires, inclinations, volitions, and acts repugnant to the
physical and moral nature of man: in all these cases,
there is only augmentation or diminution of one or more
of the affective or intellectual sensorial actions.—These
phenomena belong to the mysterious subject of volition
and perception; but when considered with reference to
the organ manifesting them, they can be regarded only

as the result of an augmentation or diminution of action, in the whole organ, in one or more of its parts, or in its connexions.   We must always bear in mind the part which the other organs take in stimulating to action the affective and intellectual faculties.

46. There was a time when specific and spontaneous alterations were gratuitously attributed to the humours: at the present day, we only know that the blood may abound more or less in its red or white parts, be more or less capable of exciting the tissues with which it is in contact, or of furnishing the materials of nutrition; that it may contain various substances, owing to the morbid state of its vessels, and receive materials introduced into the economy, unaltered by organic action.   The consequences of these diverse states of the blood is scarcely known.   This is a point worthy of the attention of physiologists, though of little practical importance, in reference to the diagnosis and treatment of maladies.   The future will decide whether we are censurable in withholding for the present our assent to pure hypothesis; should observation establish their truth, we shall not repent our hesitation to admit them; for humanity gains, and science loses nothing by this repugnance to the admission of any thing that has not been demonstrated.

47. Whatever opinion may be adopted with regard to the comparative irritability of organs, it still remains true, that excitability is only susceptible of augmentation or diminution in each of them, since in each organ function varies but in degree.

48. Considered in general, excitability does not appear to be susceptible of an absolute increase, as the means have never been discovered of prolonging life beyond the ordinary term: nor is it more susceptible of a uniform general increase, although organic action some-

times appears to be modified in all points of the body as it is in a single one.

49. Excitability decreases in proportion as man advances towards the end of his existence.

50. Organic action undergoes continual variations, but as long as the integrity of structure continues, and the impression of stimulants is moderate, excitability is not solicited beyond the degree necessary for the maintenance of life: there is an equilibrium of organic action, *excitation*, *normal stimulation;* the subject experiences the feelings of well-being, which characterizes health.

51. If in consequence of external agents, or owing to native or acquired disposition, one or more organs are so modified that the excitability is too strongly solicited and the organic action is in excess, there is *sur-excitation* in the part which receives the impression of the stimulus: this state is denominated excess of tone, of force, sur-action, sthenia, hypersthenia, hyperesthesia, irritation.

52. If the external impression be so feeble as to be insufficient for the maintenance of life, the excitability is not sufficiently solicited, and the organic action is languishing; if this action is depressed or exhausted by too frequent or too prolonged an exercise, there is sub-excitation, sub-action, atony, weakness, asthenia, hyposthenia, anesthesia, abirritation.

53. Certain agents, few in number and little known, appear not only insufficient for the maintenance of vital action, but capable of depressing it, and they may even occasion the sudden destruction of life, by producing such a modification of the organs as is incompatible with their farther action.

54. What has been said with regard to the effects produced by external agents on the organic action, is applicable to the reciprocal influence exercised by the organs

over each other: this influence becomes either too little
or too great, or the cessation of action in one of the or-
gans arrests that of all the others.

55. Sur-excitation and sub-excitation constitute the
state of *disease,* considered with reference to *organic
action.*

5. *Of Organic Action in a State of Health.*

56. Excitability is not solely the result of the impres-
sion of agents, which are at our disposal, upon the living
solid, since we cannot, even with the most energetic sti-
mulants, restore organic action in a dead body.   Exter-
nal stimulants acting upon the skin, the mucous mem-
branes, the organs of sense, and their nerves, only main-
tain organic action or excitability, brought into play by
internal stimulants, that is to say, by the reciprocal in-
fluence of the organs.

57. This mutual action of the organs varies in each of
them, according to the part they perform in the preser-
vation of the subject.

58. We must suppose, that of all the organs of the hu-
man body after birth, the brain, the spinal marrow, the
heart and the lungs, are those in which this vital action
displays its greatest activity, since death is the necessary
and direct consequence of the destruction of one of those
organs.   Next, in order of importance, is the digestive
canal and its connexions.   The low rank assigned to the
chylopoietic viscera in the scale of organs, needs occasion
no surprise, as our present object is to determine what
organs are most essential to the animal economy, the pri-
vation or destruction of which would be most rapidly fatal.

59. If, on the contrary, we are determining the rela-

tive importance of the organs with reference to the preservation of the animal, the digestive canal presents itself first, and all the other viscera are only its auxiliaries.

60. The members and certain parts of the organs of sense obey an impulse of volition, excited in the brain by internal and external impressions, and transmitted to the muscles by the nerves, and sometimes a cerebral impression coming from the interior or the exterior, which does not awake the consciousness of the individual, (cænesthesia:) the infant sucks the breast before he sees it. In a profound reverie, the hand is withdrawn from the fire without any perception of burning on the part of the individual. The digestion is tedious, incomplete, and may become painful, when the brain is deeply engaged in reflection or suffering from grief.

61. In a state of health it is seldom possible that two organs can be excited to the same degree, unless in consequence of the action of a single stimulant, operating directly upon one and sympathetically on the other. When several organs are excited at the same time by stimulants, appropriate to each of them, they react powerfully upon each other, and the excitation becomes as general as it is possible. This occurs in a state of health, when to the excitement produced by good cheer, is added that derived from venerial excitement.

62. Besides the degree of excitability which belongs to each organ, on account of the part it performs in the animal economy, the vital action predominates in certain organs, according to the age, the sex, and the constitution.

63. In infancy, the predominance of activity is remarked in the digestive and respiratory organs, in the encephalon, or in several of these parts: this predomi-

nance gives rise to four classes of infants, of which the
first are disposed to irritation of the stomach and intes-
tines; the second, to that of the bronchia; the third,
to encephalic irritations, and the fourth, to gastric or
bronchial, complicated with cerebral irritation.

64. At the epoch of puberty, the predominance of
vitality displays itself principally in the chest, and the
vocal and genital organs. This sur-activity predisposes
to phlegmasiæ of the lungs, the larynx, to venerial ex-
cess, and its dangerous consequences.

65. In women at the age of puberty, it is generally
the uterus which possesses this excess of vital action.
Hence arise the acute diseases of this organ, and the
foundation is thus slowly laid of those chronic maladies
which frequently do not fully display themselves, until
after the organ has become unfit for generation. If the
chest in women be frequently the seat of disease, this ge-
nerally arises from the influence of the genital organs.

66. In men who have passed the period of adolescence,
this organic predominance exists in the lungs, and ma-
nifests itself in any other organ, either in consequence
of native disposition, or of the numerous agents to the
influence of which they are subjected.

67. The predominance of vital action in an organ,
which exercises a certain influence over the rest of the
organism, constitutes what is generally called *tempera-
ment*.

68. The doctrine of temperaments, generally adopted,
is based upon an erroneous manner of contemplating the
living body as a whole. At a period when all diseases
were attributed to the blood, the bile, the lymph, and
the atrabile, Galen was of opinion that each of these hu-
mours predominated in certain subjects, and sought in
the different parts of the body, and even in the colour

of the hair, for signs of their predominance. But the downfall of this theory was complete, when Cabanis and Halle, pursuing the path which Bordeu first struck out, assigned the organic character of predominance of action, in the lungs, the liver, the brain, the lymphatic system, and the muscles, and thus established a better theory of the sanguine, bilious, atrabilious, athletic and lymphatic temperaments of the ancients and moderns. We must set out from the principles established by Cabanis and Halle, to complete what they so happily commenced, and to inquire whether they have not overlooked the influence of the predominance of certain organs, not less important than those which have attracted their attention.*

68. The characters, which have been assigned to the sanguine, nervous, and lymphatic temperaments, are arbitrary groups of physiological phenomena, as the general maladies of the partisans of the symptomatic pathology are only arbitrary groups of pathological phenomena. We must then reject them, and confine ourselves to the study, not only of the *predominance*, but likewise of the *insufficiency* of action in each organ, and the effects of these states upon the rest of the economy. I am particular in mentioning *insufficiency* of action, because hitherto this condition has been very imperfectly studied. Those, who have attended to it, have contented themselves with saying, that the weakest organs are those most exposed to disease, a proposition contradicted by observation.†

* Principes generaux de Physiologie Pathologique, seconde edition, Paris, 1828, 2 vols. in 8vo.

† Voyez mon article sur *l'asthenie,* dans le *Dictionnaire abrege de Sciences Medicales,* 1820; *les Nouveaux Elemens de Pathologie medico-chirurgicale,* de MM. Roche et Sanson, Paris, 1828, 2d edition, 5 vols. in 8vo; le *Traite de Therapeutique* de M. Bégin, Paris, 1825, 2 vols. in 8vo; et le *Me-*

69. Predominance of action in a particular organ renders it liable to receive the impression of morbific causes; this predominance predisposes to disease; it is never general: it is then conformable to facts to say, that the morbific disposition always resides at first in some particular organ, and that it does not display itself in several, until it has fixed itself strongly in a single one.

70. As excitability varies every instant in each organ, it is no less true, that men, compared with each other, (organ for organ, and not in their muscular and osseous tissues alone, as is frequently done,) present notable differences of excitability, and that some are more or less excitable than others: this constitutes idiosyncrasy.

71. These differences are observed to characterize whole nations, classes, and professions, as well as individuals, but they cannot be subjected to a rigorous calculation: like life, they are possessed of mobility: they depend upon the circumstances which act upon individuals, or upon bodies of men united in classes and nations. There are, in a certain sense, *national idiosyncrasies*. This is what is called the physical and moral character of each people.

6. *Of Organic Action in the State of Disease.*

72. Whenever an organ is injured, there is disease; every disease is the lesion of one or more organs; in every malady, there is a modification of organic action: we cannot conceive of this modification of action without a modification of the organ itself.

73. Organic alterations are not visible when the or-

moire de M. Vacquie sur l'asthenie, couronne par le Société Medicale d'émulation in 1830.

gan is deeply seated, or is covered by another, when they occur in the centre of an organ, or in its most delicate parts, for we are unacquainted with the intimate structure of the tissues. There are sometimes also alterations of function.

74. Alterations of function are always connected with alterations of structure. When the latter are not apparent, we conjecture their nature from the character of the former.

75. There are, consequently, in the state of disease, organic modifications which are concealed, and others which are manifest, (*symptoms*,) and it is from the latter that we judge of the former.

76. Often, after a most careful examination, the only symptoms we can discover are lesions of function, and in such cases it is frequently thought that the disease is one which affects the entire organism, and falls upon no organ in particular.

77. The different natural or artificial groups of symptoms, have received the name of *disease*. The ancients, to designate a group of symptoms, made use of a word, which it will be useful to revive, viz: *syndrome*. This denomination will be more proper than that of *prodrome*, which has synonyms in the French language. The designation of *metadrome* might be assigned to the organic changes discovered after death. A multiplicity of pariphrases would thus be avoided.

78. Since it is impossible to trace back disease to derangement of the molecular action of the diseased organs, we must, as frequently as possible, discover its causes in the sensible alteration of their structure. Since symptoms depend on altered structure, we can only cause their cessation by remedying the organic alteration, which has produced them. We must not, then, suffer ourselves to

be arrested by the contemplation of symptoms, but we must go back, whenever it is possible, to the nature and seat of the disease, that is to say, of the appreciable organic alteration.

79. To know the seat of a disease, is to know the organs whose lesion gives rise to the symptoms which characterize it; to know its nature, is to know in what consists the organic alteration which constitutes it. The internal causes which are sensible, and whose existence is proved by autopsy, can alone be the object of medicine; we should, therefore, in investigating the external and sensible effects and accidents of maladies, endeavour to arrive at a knowledge of their internal causes: the only means consists in the observation of the state of the principal viscera of those who die of every description of disease; these viscera are the internal organs of the three cavities of the body.

80. The nature and seat of this alteration are often very different from what the symptoms superficially examined, would seem to announce. It is not always easy to determine the seat of disease during life; unequivocal traces of its existence are often discovered after death; but sometimes they disappear completely at the moment of the cessation of organic action.

81. All errors in pathology are derived from the four following sources:

1st, The attention has been given for too long a time to the study of symptoms alone.

2dly, Symptoms have been considered as always giving a faithful representation of the state of the parts, which, during life, cannot be inspected.

3dly, We have hitherto neglected to determine the organs, upon which each morbific and therapeutic agent primarily exerts its influence, and the laws which go-

vern the propagation of this influence from one organ to another, or to several.

4thly, It has been thought that these agents should act upon the whole organism, at the same time, as they are observed to act upon a single one.

5thly, Finally, many among them have been thought to act upon the whole organism at once, because the whole organism appears to be affected in consequence of their action.

82. The union of anatomy, physiology, pathological anatomy, pathology, and therapeutics, which have been too long separated, will, it is hoped, correct these errors. The union of these different parts of the science of man, considered in the structure, action, alteration, and restoration of his organs, has not yet been effected, because this science is still but little advanced; but to deny the utility of what has been done, because much still remains to be done, is to expose oneself to the just reproach of ignorance or prejudice.

83. Before prescribing remedial measures, it is proper, as far as the case and the actual state of the science permits, to attend to the following rules:—

1st, To neglect no means of discovering what organ habitually predominated in the subject before the attack, what have been the morbific agents which have acted upon it, and upon what organ they primarily acted.

2dly, To trace, by the aid of the information, given by the patient and his attendants, the propagation of the morbific influence from organ to organ.

3dly, To refer each symptom to the organ in which it manifests itself.

4thly, By this means to discover all the organs more or less affected.

5thly, To draw a parallel between these data, and the

symptoms which manifest themselves in the organs which we know to be predominant in men in general, and in the patient in particular.

6thly, Not to permit ourselves to be led into error by the intensity of certain symptoms, which are more prominent than others; to distinguish those which come directly from the organ primitively or most violently invaded, from those occasioned by the organs secondarily or slightly affected.

7thly, Finally, from a comparative examination of the morbific cause, of the individual predisposition, of the principal seat of the symptoms, and their nature, to deduce the nature and seat of the disease; that is, of the organic alteration which is the principal cause of the symptoms.

84. The nature and seat of this alteration being known or presumed, we must choose among therapeutic agents; those which are most proper to cause its cessation, or at least to diminish its intensity.

85. All these agents increase or diminish action, primarily in one organ, and secondarily, in one or more of the others. There are none which act upon the whole economy at once. It is by inducing salutary modifications, at first, in a single organ, and afterwards in several, that they restore the functions to their normal state.

86. These agents are sometimes applied exclusively and directly to the diseased organ, but more frequently to some other organ which has a relation of action to it. In the latter case, it is almost always to some part of the external or internal surface of the body, that we apply them, sometimes to the cellular tissue; they are seldom introduced directly into the vessels.

87. Diseases, when abandoned to themselves, are spontaneously cured, when they have but a slight degree of

intensity, or when they affect but a small number of organs. Death is the consequence when they are very intense, when they invade a great number of organs, or even a single organ, the integrity of which is important to the maintenance of the action of several others.

88. A disease becomes more intense in proportion as it has been badly treated. In any particular country, violent diseases are the more common in proportion as the medical doctrines which prevail there are more erroneous. Yet mortality considered in general, is always nearly the same, because nature, by an admirable law, remedies, in a given time, this, as it does every other kind of destruction. The danger and efficacy of medicine are only important in relation to individuals.*

89. When the malady terminates favourably, the symptoms diminish either gradually or almost suddenly: in the latter case, there ordinarily supervene evacuations, to which a high degree of importance has for a long time been attached, designated collectively by the name of crises: the happy termination of the disease has been attributed to them; while, in reality, they are only the effects, or the signs of this termination.

90. It has been pretended that crises occur on particular days, during which it is necessary to abstain from active measures, through the fear of disturbing the salutary process of nature; these days, however, have not yet been designated with absolute certainty.

91. At the present day, it would be idle to speak of crises, were it not that the theory of the ancients upon this point, has induced many physicians to think that they should wait for these reputed salutary movements of nature, should do nothing through fear of disturbing them, and should not even attempt to provoke or to imi-

* See my article on mortality, in the Encyclopédie Moderne.

tate them. It is evident that the best means for the production of crises, is to neglect nothing that may diminish the intensity of the morbid process, limit its extent or direct it, if we may so express it, towards the least important organs.

92. Expectation is not indicated unless we are ignorant of the nature and seat of the disease; when the disease is slight; when it is evident that its duration will be short, or that it will terminate without treatment; finally, when the patient declines submitting to remedial measures.

7. *Of Sur-excitation, or Irritation.*

93. Irritation, that is, the state of an organ in which vital action has risen above the degree necessary for the maintenance of life, is the most frequent, the most grave, and, consequently, the most remarkable of the two premature morbid states.

94. Irritation is never general or uniform in the whole organism, because the causes which produce it always act locally, and because, in consequence of individual organic predominance, some particular organ, according to the constitution of the subject, is found to be alone affected, or more affected than others, by the propagation of this irritating influence.

95. Irritation is the result of

1st, An excess of action on the part of external agents, upon some part of the internal or external surface of the body.

2dly, The propagation of this action to a part functionally connected with one of the surfaces.

3dly, The temporary abstraction of stimulants from an organ, possessed of very exalted excitability;

4thly, Or, finally, the debilitation of an important organ, which gives rise to sur-activity or irritation in another.

96. Thus, directly or indirectly, irritation developes itself, primarily, in a single organ. Irritation established in an organ by any cause, direct or indirect, may exist, at least, during a certain time, without revealing any symptom of its existence, even when intense and situated in an important organ. We discover after death in a great number of subjects, profound organic alterations, which have no connexion with the disease which terminated life, and which have given rise to no symptoms— alterations perfectly resembling those, the slow formation of which is accompanied, in a great number of other subjects, with manifest symptoms of irritation.

97. Irritation often occasions profound alteration of structure, which we recognise during life, when the functions are deranged by the progress of these alterations: otherwise, we do not discover them until after death.

98. An irritation may occasion death without giving rise to any characteristic sign of its seat during life, and without leaving traces discoverable after death. We have then nothing to guide us in determining the seat of disease, except the analogy of the morbid phenomena observed during life, in these unfrequent cases; to those of the more ordinary cases, in which irritation gives rise to unequivocal signs of its seat, and leaves corresponding traces in the organs.

99. When irritation manifests itself to our senses, if its intensity be slight and the organ visible, we discover a redness, scarcely discernible, the heat a little increased, or merely a slight excess of sensibility, an unusual energy of the function, (*sthenic neurosis.*) When the or-

gan is internally situated, however intense the redness, it is not visible; and there is often neither heat nor pain; there then remains no other index of irritation than sur-activity, or even languor of function, either of that organ itself or of some other.

100. This sur-activity must not be confounded with a native or habitual excess of energy in an organ, strongly developed, either prematurely, or under the influence of a lively habitual stimulation. This excess of energy may continue a long time without constituting the state of disease, (hypertrophy.)

101. The second degree of irritation is announced by pain, a more decided redness, often by an exaltation, sometimes by a diminution of the most apparent function of the diseased organ. This degree is often misunderstood, or if the effects are observed, the nature and seat are mistaken.

102. Redness well developed, a lively heat, intense pain, swelling, the suspension of secretion and excretion, and the increase of absorption, characterize a more elevated degree of irritation, which diminishes gradually, (*resolution*,) or determines one of the following results:

The re-establishment, sometimes in a sudden manner, of the exhalations, the secretions, or excretions, (*critical evacuations*.)

A morbid sanguineous, serous, mucous, or purulent secretion, (*hemorrhagy, serous effusion, mucous flux, suppuration*.)

A sort of disintegration of the organic molecules, sometimes with spontaneous solution of continuity, (*ramollissement or softening, ulceration, perforation*.)

The sudden extinction of organic action and the death of the part, (*gangrene*.)

Finally, a transition to the chronic state, whence re-

sults a transformation or a degeneration of the irritated tissues, (*analogous or heterologous accidental tissues.*)

103. Such are the effects of the principal shades of irritation, that is to say, the phenomena which we observe in an organ subjected to a slight or very violent or prolonged action of the morbific causes which result in the local exaltation of vital action. If it were necessary to designate all the shades of irritation, they would be as numerous as the organs of the body, and the different diseases to which they are liable. Those which we have pointed out may serve as terms of comparison: like all others, they are only degrees of intensity, or duration of the same morbid state, which produces consequences more or less conspicuous, and alters more or less the part in which it exists, according to its extent, its profundity, the number of tissues it affects, and the length of time it has continued. The signs of the highest and of the lowest grade are the same; varying only in intensity, in the diverse phenomena which depend on the organic structure, and in the modification which they determine in the organs.

104. It has hitherto been customary to give the name of inflammation to the state of a part which is red, hot, painful and swelled; the use of this term may be continued, provided it be understood that it designate, not a morbid state, *sui generis,* but a certain degree of irritation, with an afflux of blood, more considerable than is necessary for the accomplishment of the nutrition and the functions of the organ; sufficiently intense and fixed to menace its integrity; finally, characterized by heat, redness, swelling and pain, or by one or more of these symptoms, according to its intensity, and the part it occupies.

105. To designate by the term *nervous* irritation, that of the nervous filaments, which are supposed to accom-

pany the ultimate vascular ramifications; to give the name of inflammation to the irritation of the sanguine capillary vessels; of sub-inflammation to the irritation of the exhalents and absorbents, is to place the seat of disease in parts of which our senses can take little cognizance. This is to fall back into an hypothesis, unwarrantable in theory, and pernicious in practice; to establish subtle distinctions, which sound logic rejects, because pathological anatomy disavows them. There are no signs in the actual state of science, by which we can determine that irritation has not extended beyond the nervous filaments, or that it is confined to the sanguine or lymphatic capillaries. As no one has seen the absorbent and exhalent capillaries, no one can know when their irritation exists. Finally, since every malady is an *organic lesion*, this denomination should not be reserved to designate alterations of texture. *Neurosis, inflammation, sub-inflammation, hemorrhagy*, are words which represent, not diseases, but groups of symptoms, the effect of irritation, or shades of irritation. These symptoms vary infinitely in their number, their intensity, and their succession; so that the same organ often presents, in succession, signs of *neurosis*, of *inflammation*, of *hemorrhagy*, and again those of *inflammation*, until all these morbid phenomena cease, while frequently the irritation still persists.

106. The only nervous irritations are those of distinct nerves, of the spinal marrow and brain, and of the nervous ganglions, and the only vascular irritations are those of the arteries, the veins, and the visible lymphatic and chyliferous vessels.

107. When a thick, melliform matter is abundantly secreted on the surface of the cutis vera, when the blood is poured out on the surface of a mucous membrane, we must be content to say, that these parts are sur-excited,

irritated; that, in consequence of this sur-excitation, there is an excess of secretion, abnormal secretion, *secretory irritation*, *hemorrhagic irritation* of those tissues. There exists, without doubt, in the first, an organic condition different from that of the second: what are these conditions? this we are incapable of determining; what we are certain of, is, that they are two effects of sur-excitation.

108. The division of irritation into continued, remittent, and intermittent, is a better founded and more important distinction. On the skin, and on the parts of the mucous membranes bordering upon it, irritation is observed to affect these different types, as is demonstrated by the facts collected by Cassimer Medicus,* from the most attentive observers of every age. Since the phenomena of external irritation cease, when this irritation itself ceases, and reappear with it, or assume greater intensity, when it increases, when we observe analogous phenomena, evidently derived from an irritation of the viscera, to cease, reappear, or become exasperated, the conclusion is most just, that the irritation which produced them has ceased, reappeared, or become exasperated. Whatever may be the explanation which is given of the intermittence of irritation, it is a fact which we must believe, even though unable to account for it. Pinel has well remarked, that a disease does not change its nature in changing its type: by this observation he gave a considerable impulse to science.

109. The functions of an irritated organ are sometimes exalted and sometimes diminished; and hence, in the case of a patient in whom the functions languish, we must not hastily conclude that there is primitive weakness or asthenia.

* Traité des Maladies periodiques sans fiévres. Paris, 1770.

110. The duration of irritation varies from a single instant to several days, months, or years. It is not uncommon for it to continue during the life of the patient. Yet it frequently terminates after the lapse of a certain time, which is usually of the same length for each particular organ or tissue; at other times, its duration is indefinite, whatever may be its seat. In the first case, after having gradually risen to the highest degree of intensity, it diminishes insensibly, the organ resumes the free exercise of its functions; the discharge of which it has become the seat disappears; or, if it existed before the disease, it returns to its ordinary state: if the irritated tissue is exposed or has been laid open by the knife, cicatrization takes place: the irritation in this case is said to be acute.

111. When the irritation becomes chronic, the part frequently presents neither redness, heat, nor pain; the swelling or the discharge continues, a solution of continuity occurs, or accidental tissues slowly develope themselves.

112. Such is the progress of irritation when confined to a single organ. But when it is very intense, or occupies an organ intimately connected with the heart, with the brain, or the mucous membranes, or even when the irritation, though slight, developes itself in a subject in whom these viscera are habitually or accidentally very excitable, the disease extends itself in the organism. Several organs suffer, with the organ that has felt the first impression of the morbific cause, (*sympathy.*) To the local phenomena of which we have just spoken, are added in a greater or less number, those indicating irritation of the heart, the hair, the muscles and the mucous membranes, and sometimes those indicating the astheny of these organs. These sympathetic

phenomena sometimes reduce themselves to a simple aug-
mentation or diminution of the exercise of the functions.
When they predominate over the local phenomena, re-
sulting from the organ primarily injured, there is danger
of mistaking the nature and seat of the disease, unless
we are able to penetrate the obscurity of the symptoms
presented by this mixture of force and weakness. When
the disease is acute, the circulation disturbed, the heat
of the surface increased or diminished, and there is no
prominent sign of local lesion, and no mode of determin-
ing to what class or species of neurosis, inflammation,
hemorrhage, or organic lesion, to refer it, it is said that
it is an *essential fever*: at least such has been the course
pursued until within a few years. Since the labours of
M. Broussais, the necessity has been recognised of no
longer confining our attention, in studying the nature of
diseases, to the most prominent symptoms; we must en-
deavour to discover in every disease which appears to be
general, the local irritation which has given rise to it.

113. But there is a fundamental truth, to which Brous-
sais has not called attention; viz. that the acute or chro-
nic irritation of any tissue or organ, may be succeeded
by astheny of this tissue, or organ, whether the local or
sympathetic signs of irritation persist, or cease with it,
and that the sympathetic phenomena of irritation may
continue after the irritation itself has disappeared. Thus
when we observe a mixture of the morbid phenomena of
strength and weakness, we must not only trace them to
the primitive irritation, which has produced them, but
likewise determine whether the irritation persists with
them, or has ceased; or, finally, whether it is replaced
by astheny of the organ, in which it was seated, or of
any other organ.

This I conceive to be the fundamental principle which

should guide the pathologist in the study of irritation and its consequences, and the practitioner in the treatment of disease.

M. Lallemand has lately given an admirable demonstration of this pathological view.*

8. *Of Sub-excitation, or Astheny.*

114. Astheny is the state of an organ, in which the action is below the degree necessary for the maintenance of life. This morbid state, though less frequently primitive than irritation, and less capable of producing disorganization, should not be studied less carefully than the latter.

115. General astheny is as rare as local astheny is common. The former, however, occurs at the termination of many mortal diseases; but then, whether primary or secondary, it is irremediable. In almost all diseases, we observe a secondary local astheny. A person suffering is ordinarily but little disposed to motion, and even when he desires to move, his muscles slowly and incompletely obey his will, or, if they are brought into action, they determine irregular movements, on account of some muscles contracting more feebly than others. But this astheny and this muscular spasm are the effect of an irritation, whose influence propagates itself to the brain.

116. The muscles are not the only organs, which exhibit this apparent weakness. The same diminution of function may occur from the affection of any organ, which is irritated. Consequently, we may admit, for the sake of distinction, an astheny of *function*, and an astheny of *nutrition*, or of molecular action. The first is

* Cinquième Lettre sur l'Encéphale, Paris, 1830.

generally a symptom of an irritation, and rarely the effect of the second.

117. The distinction, which we have just established, it is not always easy to make in practice; but, as astheny has hitherto been more frequently imagined than studied, this distinction will not be without utility.

118. The astheny of an organ is the effect,

1st, Of the diminution or of the complete and prolonged abstraction of the stimulants, which act habitually upon it.

2d, Of the diminution of the exciting influence which the organs exercise over each other.

3d, Of the excessive stimulation of an important organ, the slightest alteration of which is opposed to the continuance of action, in its usual degree, in all the others: this organ then acts exclusively for the interest of its own preservation, if we may express ourselves thus; its nutritive action is exalted, although its sympathetic functions languish.

119. A slight astheny gives rise to no morbid phenomena; whatever be its seat, it is always of short duration. If frequently repeated, it may give rise to irritation of an organ, which sympathizes with the affected organ.

120. Intense astheny is characterized by loss of colour, flaccidity, and want of heat in the tissue in which it occurs, and by a sort of insensibility; the functions of the tissue diminish in activity or cease entirely.

121. When astheny is very marked in character or prolonged in duration, it is often observed that a transient irritation suddenly replaces it, and immediately disappears, determining the complete extinction of vital action in the part, (gangrene.)

122. Primitive astheny cannot determine chronic dis-

organization, except in subjects naturally very irritable, in whom the circulatory action is accidentally languid; in individuals of this constitution, slight irritation, often inappreciable, occurs from time to time, and favours disorganization, or the slowness of the circulation alone produces it.

123. Astheny, consecutive to irritation, is a frequent cause of disorganization, it is to this we must refer the production of accidental tissues, possessing an activity inferior to that of the parts in the midst of which they are developed. By alternating with irritation, it determines the formation of accidental tissues without analogy in the organism, tissues in which irritation ultimately predominates, and becomes permanent, giving rise to ulceration.

124. The stomach itself may fall into astheny: M. Broussais gives to gastro-intestinal astheny, the name of *adynamic languor of the digestive passages.*

125. Gastric asthenia should be studied with care, were it only because of its power of determining gastritis. Indeed, in this viscus, as in the organs of sense, astheny, the consequence of a defect of stimulation, is promptly followed by an exaltation of sensibility. But if the absence of all stimulation continues, the excitability ultimately becomes exhausted; the organ becomes insensible, if it be one of those which transmit external impressions to the brain; death occurs, if it be the stomach, either from want of materials, or because the gastric mucous membrane ceases to communicate to the brain the impressions, without which the latter organ cannot act. These impressions are more immediately necessary than the nutritive materials, since the administration of a stimulating drink excites cerebral action

more than the most nourishing substances, which are not of a stimulating nature.

126. It is only astheny of the brain, of the spinal marrow, of the heart, the lungs, and the stomach that can directly occasion death.

127. If the astheny of an organ excite irritation in it, the former ceases as soon as the latter is established; there is no asthenic irritation any more than there is irritative astheny: for, we repeat it, astheny of nutrition must not be confounded with astheny of function.

128. It is not more easy to distinguish astheny of the nervous filaments from that of the vessels, than it is to distinguish their irritation; that of the lymphatic capillaries is not more distinct, for, if paleness and a relaxed state of en bon point, seem to announce it; these symptoms appear to be referrible to one of the shades of astheny of the lungs rather than to any other cause.

129. Astheny of the arteries appears to have little influence, if we consider that they are but instruments, which are nearly passive, in the circulation. In the veins, astheny is better characterized; it is recognised by varices, by violet spots which form under the epidermis, by the blue tint of the skin; but what occurs on the skin, does not always take place in the mucous membranes, which are frequently in a state diametrically opposite.

130. Astheny of the heart produces different effects, according as it occurs in the arterial or venous side of this organ.—There results syncope, dropsy, or scurvy, according as the weakness is chronic or sudden.

131. It has for a long time been believed that hemorrhagy without manifest signs of irritation, was the effect of astheny of the capillary vessels: in this case it is necessary that the heart should preserve a force of impul-

sion, superior to the force of resistance of the capillaries. Even here the hemorrhagy does not establish itself, except after the occurrence of a slight irritation, which, after having determined the presence of a greater quantity of blood, leaves the part in a state of astheny.

132. Morbid fluxes in general are never occasioned solely by astheny of the capillary vessels, unless it be at the instant of death: we, however, often observe the sweat to cease on the approach of death, although the weakness must then be more considerable than at any former period.

133. We are led to believe, that astheny, like irritation, may be intermittent, but many researches remain to be made on this important point of doctrine, which the reformed theory of intermittent fevers cannot but elucidate.

134. In general, astheny continues but a short time, because man has recourse to stimulants of every kind, when he experiences its first symptoms, until, finally, he suddenly or gradually exhausts his excitability, by a stimulation too violent, or too often repeated.

135. The astheny of an organ renders it more accessible to the causes of irritation, as well as all the other organs, even when they do not participate in its weakness. This fact, worthy of remark, is one of those which no one contests; but we must not from this conclude that the irritation which supervenes in a debilitated organ or subject, is astheny.

136. M. Broussais, struck by the incontestable frequency of irritation, shows himself too exclusive in considering astheny only a consequence of sur-excitation in an important organ. If he grants that primitive astheny contributes to disorganization, he denies that it occurs in fevers, which prevents his attempting to disco-

ver the cases, in which stimulants may be employed with
success in these maladies.

9. *Of Organic Action, considered with Relation to
Therapeutics.*

137. Since diseases are only organic irritation, or as-
theny, always primitively local, never uniformly extend-
ed over the whole organism, and often co-existing; to
cure them, it is necessary, after having distinguished the
irritated and the weakened organs, to stimulate the lat-
ter, and to debilitate the former, in such a manner, as
not to exasperate the morbid state of the one, in attempt-
ing to calm that of the other. Especially, we must not
indulge the chimerical hope of increasing excitability
in an absolute manner; we can only regulate organic ac-
tion, which is exalted in one part and depressed in ano-
ther. When excitability is positively diminished, no-
thing can restore it to its primitive state. On this sub-
ject, the Brunonians have shared to a certain point the
error of the alchymists; the latter, sought the divine
arcanum which should prolong life, while the former be-
lieved they had found in opium, wine and bark, *specifics*,
to prevent its extinction before the latest period allowed
by nature.

138. When a disease manifests itself by phenomena,
which extend to several organs, we must endeavour to
recognise the organ, whose lesion gives rise to that of
the others, for the purpose of determining whether it be
proper to debilitate or to strengthen it, to increase or
diminish its vital activity, with a view to cause the dis-
appearance of the sympathetic phenomena, whatever
may be their nature, whether they appear to announce

force or weakness in the organs in which they manifest themselves.

139. The first rule in therapeutics is to remove every morbific cause still acting, and to prevent the application of others.

140. Irritation may be combatted by diverse means, which are all efficacious, when they are judiciously applied, and of which none should be prescribed indifferently in all cases of irritation.

141. To reduce action in an irritated organ, we must, in the first place, reduce the number and energy of the stimulants, which habitually act upon it, and then diminish the sum of the materials which enter into the composition of the organism, always by diet, often by phlebotomy, sometimes by arteriotomy. The indications afterwards, are, to diminish the quantity of blood which traverses this organ, by the abstraction of blood from its capillary vessels, or from those which are nearest to it; 2dly, To place it in contact with substances called refrigerant, emollient, or narcotic.

142. If the organ be so situated that we cannot hope to take away blood directly from its capillary vessels, we must not neglect to practise this operation on the organ which is nearest to it: diet must be insisted upon, and frequently venesection must be resorted to. Refrigerants, emollients, and narcotics must be applied to the skin, or the mucous membranes.

143. To these means, which constitute what is properly called the anti-irritative method, otherwise denominated the *antiphlogistic*, should frequently be added the employment of irritants, placed in contact with a tissue, more or less remote from the irritated organ. These irritants are, first, rubefacients, vesicatories, and escharotics, applied to the skin; secondly, emetics and

purgatives, fixed and diffusible stimulants, and tonics applied to the mucous membranes. These means belong to the *derivative* method, when the organ to which they are applied, is not the irritated organ.

144. There are cases in which the direct application of stimulants, tonics, irritants, rubefacients, vesications, and even escharotics, causes the cessation of the irritation by accelerating, or by preventing the consequences. This constitutes the disturbing method, (methode perturbatrice.) In the internal organs, especially, it is almost always dangerous, either in its immediate or its remote effects.

145. When irritation is intense, the anti-irritative method alone is suitable.

146. When by this method, the intensity of the irritation has been diminished, or when it is slight, the derivative method is often very advantageous: but if we mistake the degree of irritation, if the principal organs are very excitable, and particularly the heart, the brain, or the mucous membranes; if we produce an action which is too violent, or too near the diseased organ, the irritation increases in place of diminishing; or instead of a single irritation, we often have a second, sometimes more serious than the first.

147. If we consider how high a degree of excitability is possessed by the mucous membranes, the facility and promptitude with which their irritation disturbs the organism, and occasions the disorganization of their tissue, we will perceive the necessity of being very reserved in the employment of the disturbing method in treating the irritation of these membranes, and even of the viscera in their vicinity. These means are not to be used except with a caution which should never be regarded as timidity. Since Hecquet, Chirac, Baglivi,

Rega, Van Swieten, Pomme, and so many other obser-
vers have exposed the fatal effects of the abuse of these
means in the treatment of internal irritations; since the
anatomical labours of M. Prost have confirmed the state-
ments of these high authorities;—finally, since M. Brous-
sais has demonstrated what these authors discovered, it
is no longer allowable to administer empirically these
powerful agents, in every case in which the weakness of
the muscular system seems to indicate their use.

148. Yet the disturbing method has been employed
externally with incontestable success, and this has led to
the presumption that it may sometimes be resorted to in-
ternally with advantage, with the exception of rubefa-
cients, vesicatories, and escharotics, which, however,
some physicians do not hesitate to prescribe in this man-
ner. This presumption is converted into certainty by
a small number of facts, which have hitherto been badly
interpreted.

149. Intermittent irritation should be treated accord-
ing to the same principles as continued irritation, but
during the intermission, we may apply to the organ sti-
mulants, which prevent the return of irritation, and we
even sometimes cause its disappearance, by applying sti-
mulants to the organ at the instant when it is irritated.
This last case is analogous to those in which the same
means cures a continued irritation: experience, however,
appears to demonstrate that in certain internal intermit-
tent irritations, we may resort to this method in prefe-
rence to any other to save the life of the patient.* This

* This passage, which dates from 1823, is a reply to those persons, who,
whether with bad or good intentions, criticize without reading, and impute
absurdities to authors, whose success annoys them: it is time that prejudice
and ignorance should cease to accuse us of being ignorant of the results of
experience in the treatment of intermittent diseases.

peculiarity forms no exception to the principles which have just been laid down.

150. The rules which govern us in the treatment of irritation, are those which we should follow in the treatment of astheny, which depends directly on irritation; but when it is primative, when it persists after the irritation, when it menaces the life of the patient, in consequence of the seat which it occupies, it claims the attention of the practitioner and presents special indications.

151. After removing as far as possible every thing that might increase or keep up astheny, we must add to the mass of materials which enter into the organism, or renew them by the use of good aliment cautiously given, if the patient has been on an unwholesome or slender diet, we must restore the stimulants of which the organ has been deprived, and apply to it medicinal substances, stimulants and tonics, commencing with small doses, and gradually augmenting them. When the organ cannot be placed in contact with these therapeutic agents, we apply them to the skin, or the mucous membranes, that the impression produced, may be propagated to it. When we act upon the skin, we frequently have recourse to rubefacients, vesicatories, and escharotics. Adventurous practitioners do not fear to employ internally, substances which are not less active, and the effects of which are often fatal.

152. We may act upon several organs at a time, even when the weakened organ is so situated that nothing prevents our acting directly upon it. We may even have recourse to the stimulation of several organs, when astheny appears to extend to the whole organism: we must then, however, avoid the parts which might be susceptible of irritation, under the influence of stimulants.

153. In the direct administration of these means, we must never forget that a weakened organ is often very accessible to the influence of the causes of irritation, and that what is employed under the title of a medicine, may become a destructive agent, particularly when applied to the mucous membranes; for we generally run very little risk in stimulating, even very energetically, the skin.

154. When it is proposed to stimulate a weakened organ, it is important to inquire whether there be not in some other part of the organism, some irritation which may be sympathetically increased; we must particularly avoid applying stimulants to a part which is already irritated, or has formerly been so to a high degree or in a permanent manner.

155. Stimulations, of too active a kind or too often repeated, exhaust the excitability instead of reviving it, when they do not excite irritation.

156. The preceding remarks relate to the direct antiasthenic method, local or general. The direct treatment of irritation, in consecutive astheny, constitutes the indirect anti-asthenic method, opposed to the derivative method of irritation.

157. Should the success of this method be considered as proving that the irritation of one organ depends sometimes on the astheny of another, the conclusion would be just. In certain cases, indeed, a cure is effected only in consequence of the strengthening of a weakened organ: this is what occurs, when at the commencement of an attack of fever, occasioned by the impression of cold, the fever is made to cease by heating the skin. But the case is different when to cure an irritated organ, we stimulate another organ, whose action is in no respect weakened: in this case there is a real derivation.

158. Astheny has not hitherto been studied in each

organ. It is desirable that this important point should be made a subject of research: we should then discover to what point the intermittent astheny of an organ may contribute to the production of periodical diseases; and we should know whether every alteration of texture is dependent entirely upon irritation, as is thought by some pathologists, or is entirely independent of it, as others believe; the elucidation of these points would throw light upon the therapeutics of these maladies, which are as yet abandoned to empiricism.

159. If acceleration and slowness of organic action, if irritation and astheny, never resulted in any thing more than disturbance of function, the principles which have just been laid down would suffice for all cases of disease which could present themselves. But to the afflux, which is the effect of irritation, to the congestion which follows astheny, often succeed profound alterations in the texture of the organs.

160. These alterations may, in my opinion, persist after the irritation or astheny has ceased. These two morbid states frequently return and alternate with each other in the affected organs. It is then necessary to show what course the practitioner should pursue in a case, the treatment of which is so difficult and inefficacious, and may so readily prove injurious.

161. Unequivocal signs of irritation frequently accompany alterations of texture; vital action often appears to be in no respect deranged in the organ affected; more frequently, however, its functions are languid, of whatever nature the derangement of vital action may at first have been. Often, after the lapse of an indefinite period, high irritation occurs in the altered tissue, and death is the consequence.

162. Since most of the alterations of texture develope

themselves under the direct or sympathetic effect of sti-
mulating causes, it is proper, in most cases, to oppose to
them the means appropriate to the treatment of irritation:
this is often requisite even when every thing appears to
announce the astheny of an organ.   We should here re-
call the distinction, established between astheny of func-
tion, so often consecutive to irritation, and astheny of nu-
trition, so unfrequent in general, although it is more com-
mon in chronic than in acute diseases. But it is not upon
the anti-irritative local method that we must insist: re-
gimen, derivatives, and sometimes stimulation of organs,
very near the affected one, constitute the means to which
we must have recourse, with the precaution of discon-
tinuing our measures, as soon as the signs of irritation
reappear or increase.   It is remarkable that in a small
number of cases, this irritation is renewed with advan-
tage, provided it be for a very short time, and be prompt-
ly remedied by the anti-irritative method.

163. In the treatment of alteration of texture, the lo-
cal treatment rarely suffices to act efficaciously, upon the
diseased organ; to renew its composition it is necessary
in some sort, to renew the composition of the whole or-
ganism.

164. It must not hence be concluded, that the mani-
fest local lesion is connected with a general latent lesion;
but only that we cannot act profoundly upon the nutri-
tive action of an organ, but by acting upon that of all
the others; since to effect this end, it is necessary to mo-
dify chylosis and hematosis, and to excite in diverse or-
gans a sur-excitation which occasions the diminution of
local irritation, to which the alteration of texture is al-
most always primitively to be referred.

165. General organic lesions, then, exist no more than
general vital lesions: there is, however, this difference

between organic and vital lesions, that in the latter, it is often sufficient to act upon the diseased organ, while in the former, it is almost always necessary to act upon several points of the organism at the same time.

166. There are, it is said, general diseases, since certain maladies are occasioned by an alteration of the blood, as a general lesion of the nervous or sanguine system. What are these diseases? what are these alterations of the blood? are these alterations unconnected with a primitive state of the organs? and, in the first place, what is the normal state of the blood? Until these questions have been answered, we must adhere to what we know of the organic solids, rather than have recourse to imaginary hypothesis, concerning the fluids which they contain. As to general lesions of the nervous system, are there any which do not commence by a nervous filament or by one of the centres of this system? Who denies the generalization? But who does not know that it cannot be primitive in an assemblage of so many parts, subjected to influences, all differing from one another. As to general lesions of the vascular system, there is no proof that they are ever completely so; in proportion as it is uncommon to see them apparently primitive, so is it frequent to see them secondary.

We disavow no fact of humeral pathology, whether nervous or vascular; but wish to establish a science of diagnosis and indications, based upon some rare facts, some groups of symptoms, separated from their antecedents, and some autopsic examinations: this is to make a system, and to act in the very manner which our adversaries so strenuously reprobate; this is to rush into darkness, while they applaud themselves as alone possessed of light.

Let us study the physiology and pathology of each or-

gan, and classify under each organ the facts which belong to it: if we discover any thing positive with regard to the blood, or any other of the fluids, let us refer it to the physiological and pathological history of the organs which elaborate and carry them. If this natural course were adopted, the deficiencies of our knowledge would be perfectly apparent, and would be remedied as science advanced.

166. From the general remarks which have been made we may conclude, 1st, That every disease is local; 2dly, that every disease is, primitively, an irritation or an astheny; 3dly, that these two morbid states may co-exist in the same subject in different organs; 4thly, that they may succeed each other in the same organ; 5thly, that to treat diseases successfully, we must go back to the irritated or weakened organ, whose influence is felt by the economy; which organ it is generally necessary to debilitate, though sometimes to stimulate, directly or sympathetically; 6thly, finally, that intermittent diseases and alterations of texture should be treated according to the same principles as continued acute diseases, with the exception of the modification which results from their more or less rapid progress, their degree of danger, the intermission which permits us to act in the absence of the disease,* or the profound and permanent shock which the texture of the organ has sustained. Besides these rules for the treatment of disease, we may mention those happy and indescribable inspirations, which belong to consummate experience and a rare degree of skill; inspirations, which should never be erected into rules, and whose results should not be opposed to those of general observation.

* Journal Universelle des Sciences Medicales, tome 7, page 248.

167. The art of observing, says Senebier, consists in penetrating the qualities of the subjects which we study, in tracing their effects, seizing their resemblances, and their differences, discovering their relations, and determining the cause of a given effect, from the different conditions of this effect, or its analogy to other effects.

168. Experience, says Zimmerman, is the knowledge of the art of curing, which is acquired from judicious observations, and experiments; it presupposes the historical knowledge of its object, the capacity of remarking and distinguishing all the parts; erudition furnishes historical knowledge; the spirit of observation teaches us to see, and genius to draw conclusions. To have seen much, then, does not constitute experience; the simple inspection teaches nothing, nor yet is the attentive observation of a fact what is meant by true experience: it is only a most happy organization, and a philosophical spirit that can qualify us to seek it in the works of the learned, and in the bosom of nature.

169. Theory is the knowledge logically arranged, of all the phenomena which we observe in the organs during life, and after death. A theory which should connect together the scattered facts of medical science, would render, says Darwin, men endowed with mediocrity of talent, capable of exercising the healing art; it would likewise render it possible to distinguish the true disciples of medicine, from those who have nothing in their favour but impudence and address: *reflection is theory*.

170. True practice is the exercise of the art of observing and treating diseased organs, under the inspiration of knowledge and reflection.

PHYSIOLOGICAL PYRETOLOGY.

At que hercle magna quæstio esse potest an non essentiales febres peculiarem affectionem partium aliquarum internarum sequantur. BAILLOU.

CHAPTER I.

Of Fevers in General.

PATHOLOGICAL Anatomy has revealed the seat and nature of a great number of diseases, and, in many of them, its decisions have been incontrovertible; but autopsic examination does not always discover manifest organic alterations. Disease has been divided into two classes, of which one comprehends all the affections which depend on organic modifications, discernible after death, and the other all those which leave no sensible traces of their existence.* Nervous diseases and fevers have been comprehended among the latter. To guide him in determining the nature and seat of a disease which terminates happily, or which leaves no trace after a fatal termination, the physician has the physiological analysis of the symptoms, the causes of the disease, and the effects of treatment. Thus, the study of the causes, the symptoms, and the traces of disease, as well as of the effects produced by the therapeutic agents, and the comparison of these diverse phenomena with those of the organic modifications in a state of health, constitute the whole method to be followed in investigating the

* Anatomie Pathologique, dernier cours de Bichat, Paris, 1825, in 8vo.

nature, seat, and treatment of disease. But this method should be applied in its whole extent; otherwise the knowledge acquired is imperfect, or our researches result in error. To seek the indications so fulfilled exclusively in the causes, the symptoms, the morbid traces, or the properties attributed in the schools to medicines, is to contract the field of observation, to abridge the data from which our conclusions must be drawn, and to reduce practice to certain systematic or routine views.

Considered in their symptoms alone, there are some diseases whose phenomena are so characteristic that we cannot fail to recognise their nature and seat. Such are pneumonia, coryza, pulmonary cataarh, &c. These diseases are few in number, and in some of their shades it is not always easy to determine the seat of the affection. There are other diseases whose symptoms have not hitherto led to a knowledge of their seat and nature, or rather, whose symptoms, badly interpreted, have often led to mistaken views as to their nature and seat. Among these are fevers, with the consideration of which we shall be exclusively occupied.

In the writings, which bear the name of Hippocrates, there is nothing resembling the manner of considering fever, which has been prevalent in latter times. When the Hippocratic school made use of the words, πυς, πυρετὸς, they never intended to designate a class, a genus, a species of disease, but only a symptom: viz. the burning heat of the skin;* and if they often employed these two expressions without particularizing the other symptoms, it was because they naturally reminded them of most of those which ordinarily accompany the morbid heat.† It is only in the writings of Galen that the word πυρετὸς is used in the sense which the Latins have given to the word *febris* and which we have so long assigned to the word fever. Let it be remarked, that patients, and even physicians, use the latter word in the same sense in which Hippocrates employed the word we have just

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* Qui primi omnium medicinæ initia et quasi fundamenta jacerunt, quam ipsi rudem adhuc et incultam rerum cognitionem haberunt, nomina morbis confixerunt, non ex rei essentia, cui primum et maxime medemur, sed ex eo quod serte primum occurreret. Fernel, 1656, in 4to, tome II. page 58.

† If the word fever be still retained in the language of science, it is desirable that this signification alone should be attached to it.

mentioned.   Thus, when a patient experiences heat of the skin,
and when the physician observes this symptom, they both pro-
nounce the word, *fever*, without attaching to it any other idea
than that of the heat which exists.   Hippocrates does not appear
to have contemplated a division of fever, according to their
symptoms, by the expressions *phricodes, lyngodes, lypyriennes,
ardentes, et epiales*, which occur so frequently in his writings;
he did not intend to designate so many distinct species of fever.
Nosologists have in vain endeavoured to refer these pretended
species of fever to those which were known to them. *

M. Broussais appears to have been ignorant that the father of
medicine did not make of fever an entity, and that essential fe-
vers are not to be met with in his writings.

From Galen to the present time, most physicians have applied
themselves particularly to the study of the diagnosis, the progno-
sis, and therapeutics of fevers: some have more particularly oc-
cupied themselves in dividing them into orders, genera, and spe-
cies; and the paramount importance of determining their nature
and seat has finally been recognised.   The history of pyretology
might then be divided into three parts, of which the first should
comprehend *symptomatic pyretology*, the second, *methodic
pyretology*, and the third, *physiological pyretology*.   Thus,
among physicians, some have laid the foundations of science by
collecting facts; others have endeavoured to build up the edifice
of science by connecting facts together according to their resem-
blance; and, finally, others are persuaded that the only method
which can conduct to a profound knowledge of fevers, and their
most efficacious treatment, is to compare the patient with a man
in health, and the febrile symptoms with the traces discernible
in the organs after death; to seek for the organ in which resides
the focus of these morbid phenomena, and to determine the
means most proper to remedy the lesion of this organ.   The
utility of investigating the nature and seat of fevers has always
been recognised; but physiology and anatomy were, in former
times, too imperfectly understood to enable physicians to de-
rive much advantage from researches of this kind, the prosecu-

* Laennec; Propositions sur la Doctrine d'Hippocrate, relativement à la
Medicine Pratique; Paris, 1804, in 4to, p. 19.

tion of which forms the distinctive character of the modern French medical doctrine, as presented by M. Broussais.

Fevers are so numerous and so different in appearance that it would be impossible to give a general description of them. There is not a single derangement of function or of tissue, which may not be observed in some of these maladies. They have then no specific symptom or pathognomonic sign: the acceleration of pulse cannot be given as such, for it is present in diseases which are not fevers, and in certain fevers it is absent.

We can, however, arrange under different heads the phenomena which we most ordinarily observe in fevers on account of their analogy, their frequent co-existence, their real or apparent dependence and their habitual succession.

Thus, sometimes we observe heat of skin, force and frequency of pulse, extreme exaltation of sensibility, excessive irritability of certain parts, and even inflammation of some particular part: all those symptoms, in fine, which announce a well characterized reaction. Sometimes, on the contrary, the skin is cold, the pulse languid, the senses blunted, and the sensibility as it were annihilated; certain tissues appear no longer to react under the influence of stimulants: in a word, every thing appears to announce profound weakness. At other times we observe an embarrassing alternation of the phenomena which denote reaction, and of those which characterize organic weakness.

This abstract view of the febrile symptoms has led to the establishment of the following species of fever; viz.

The inflammatory, sanguine, sthenic or irritative fever; synocha.

The *putrid, asthenic* or *adynamic* fever; synochus.

The *malignant, nervous, ataxic* or *typhoid* fever: *febris atacta.*

But sur-excitation, prostration and ataxy do not manifest themselves in a manner so uniform as these names seem to indicate. Sur-excitation is found at the commencement of most fevers, ataxy at the latter period of a great number, prostration at the termination of all those which prove fatal: these two last forms rarely occur without having been preceded by reaction, of greater or less duration.

From the earliest times of medicine, it has been known that in

fevers characterized by an intense excitation, this morbid state manifested itself by inflammatory symptoms alone, or by inflammatory symptoms united to those which appear to announce a superabundance of bile and mucosities. The progress of observation has shown that excitation is sometimes more highly developed in the stomach, and at other times in the secretory apparatus, formed by the gastro-intestinal mucous membrane: this observation has led to the division of the fever of irritation, into,

The *inflammatory* or *angiotenic* fever; synocha.

The *bilious, gastric, meningo-gastric* fever: febris biliosa.

The *pituitary, mucous, adeno-meningeal;* febris mucosa.

Very observable differences in the symptoms and course of typhus have caused this fever to be considered as a remarkable variety of fever, adynamic and ataxic at the same time.

With ataxic fevers have been classed the yellow fever and the plague or adeno-nervous fever.

By the combination of these diverse denominations, it has been thought, that all the shades of febrile diseases could be indicated, or, as they are termed, the complicated fevers: hence, the name of *inflammatory gastric* fever, or *causus* of the ancients: *gastro-adynamic* fever, *mucous ataxic* fever, &c.

When the symptoms of these fevers succeed each other, and pursue their course without complete interruption, they are called continued fevers. Most of them, at certain hours every day, or on certain days, augment in intensity, and the sufferings of the patient increases. This transient exaltation of symptoms has received the name of paroxysm or exacerbation, according as it is, or is not preceded by a rigour, followed by heat and sweat: the symptoms of reaction alone ordinarily undergo this increase of intensity. We likewise give the same name to the appearance of these symptoms, when at certain hours, or on certain days, fixed or indeterminate, they temporarily take the place of other symptoms, instead of only surpassing them in intensity and mingling themselves, so to speak, with them. In those cases in which the paroxysms return at periods which are fixed, or nearly so, the disease continuing in the intervals which separate them, it receives the name of intermittent fever.

Fevers abandoned to themselves, or subjected to treatment, continue during some days, often one or more weeks, rarely more

than a month and a half: if they continue for a longer time, they lose the name of fevers, and are referred to diverse chronic diseases.

There are other fevers which last only for the space of one or more hours, cease for one or two days; return, cease again, re-appear at fixed epochs; and thus continue to appear by paroxysms, separated by intervals of health: these are intermittent fevers. These fevers terminate naturally or by the aid of art, after the occurrence of some attacks, or they pass into the continued type, or they became suddenly fatal; or, finally, they pass into the chronic state, and are prolonged indefinitely: on this account, they have been divided into benignant, pernicious, and chronic.

To these fevers must be added the hectic fever, which is at first intermittent, afterwards continued, and often remittent in its type. The hectic fever is the constant concomitant of a great number of hectic affections. Such have been the most general results of the exclusive study of symptoms; nothing connected with this subject has been neglected; their analogies and their differences have been subjected to an analysis more or less happy in its results. Every thing relative to the invasion, the type, the progress, duration, and termination of these diseases, has been noted with a diligence worthy of all praise; but the only manner, in which their proximate cause has been investigated, has been by seeking for it in the humours, the principle of life, and the vital forces and properties. In the midst of these idle discussions, occasioned by researches so badly directed, the seat and nature of fevers remained nearly unknown.

The connexion established by the ancients between symptoms and morbific causes, was based upon pure hypothesis. All researches with regard to that connexion, which physiology reveals and pathological anatomy confirms, has at length been neglected, despised, and even proscribed. The causes of each species of fever have been confusedly accumulated in the general description of the disease, without any attempt to determine upon what organs they primitively exerted their influence, or how this influence, always local at first, is propagated to a greater or less extent to the rest of the organism, according to the age, the sex or the predisposition of the individual.

In consequence of this vicious method, nothing has been seen in fevers from their very commencement but irritation, adynamy, and ataxy, invading the whole organism. No attention has been given to the important fact, that in most fevers, one part of the economy is generally in a state of manifest excitation, while the rest of the organism is languishing or suffering from a combination of excitation and weakness, difficult to explain without the aid of physiology. On the appearance of the signs of prostration, those of excitation which have preceded them or which still continued, are immediately forgotten. Farthermore, every external local irritation, well developed, incontestable, with some signs or even without any sign of reaction in the circulatory system, whenever it appeared, ceased, and reappeared, at fixed epochs, in the manner of the attacks which constituted intermittent fevers, has been regarded as a general febrile disease, disguised under the appearance of an affection purely local, and according to this strange theory, has been established the genus of *masked* intermittent fevers. This is undoubtedly the most striking example of the abuse of analogy and the most forced of all the classifications attempted by the human mind.

All this is to be attributed to the exclusive and superficial study of symptoms, to which too much importance has been assigned, to a vicious and forced generalization of ideas, to the rejection of sound physiological reasoning; to the want of an etiology founded upon a just comparison of the phenomena of health and those of disease, to preconceived ideas of the nature and seat of fevers; to negligence in making autopsic examinations, to the indifference and even fear manifested with regard to this mode of investigation, in the case of fevers, and, to sum up all in a few words, to the separation of physiology, pathology, and therapeutics, and especially to the imperfection of pathological anatomy. The science of man is undoubtedly so vast that to facilitate its study it must be divided. But the result of this indispensable division has been, that each individual has confined himself to that part of the science which best accorded with his peculiar turn of mind, or to the cultivation of which he had been led by circumstances. The progress of one part of the science has been totally devoid of any beneficial bearing upon the advancement of the other parts. Errors have thus passed uncorrected; and, strange

to say, science itself has at last been considered as not only insufficient, but even pernicious in the exercise of art.   The greatest service rendered to medicine by M. Broussais is his having demonstrated the necessity of a union of all the branches of the science of man.

The progress which science has made since the promulgation of this grand idea, has induced many physicians to acknowledge that in the midst of this general disturbance, which, according to them, characterizes fever, every point of the economy is not equally affected; but they assert that the local affection which appears to dominate, and which most generally leaves unequivocal traces after death, is nothing but a dependent affection, a consequence or effect of the general affection, always primitive, which constitutes fever; as if hepatization of the lungs, observed in the dead body, were to be attributed to the heat of the skin, the force and frequency of the pulse, and the cough observed during life in the course of pneumonia.

Pinel has rendered a signal service to science, in divesting pyretology of the antiquated theories in which facts had been buried, and by continually directing the attention by his advice, by his example, in his writings, in his course and at the bed-side, to the observation of phenomena.   By classing together in six distinct groups the febrile symptoms which ordinarily manifest themselves together, or in an order of succession little liable to change, he established six orders of fevers, the characters of which were more clearly traced than those of the different fevers admitted in the ancient schools.   He has thus carried to its highest degree of perfection what he denominates nosographic pyretology.   He has done more: he has endeavoured to refer some of these orders of fevers to the part of the body which appeared to be particularly affected in them.   He would have advanced farther in the path of truth, which he himself had opened, if, not content with having given to fevers denominations founded upon certain external appearances, and upon the signs of certain functional lesions, denominations which, he says, are by no means designed to express the nature of these maladies, he had known all the importance of an investigation of their seat; if he had devoted himself with ardour to this investigation, instead of presenting it as the object of a curiosity purely speculative; as a mere recreation of the

mind, and as perfectly destitute of any practical bearing. At all events he has done too much to allow the reproach of not having done more.

Since 1798, his pyretology has been in the hands of all the French physicians; it has been naturalized in Spain; the Hippo-cratic physicians of Germany have bestowed upon it merited praises; those suffrages are based upon the incontestable services which this learned professor has rendered to medical science, in perfecting the art of describing and classifying disease, rather than upon the actual merit of this production, which has suffered the fate reserved for every scientific work, after the lapse of a number of years. It still, however, serves either tacitly or avowedly as the basis of instruction in the school of medicine of Paris. A great number of physicians, who do not openly adopt it, have no other views on the subject of fever than those of Pinel. We may regard his book as the expression or summary result of most of the works, undertaken on the doctrine of fever, until the year 1814; but since that period pathology has made an immense progress, by its more intimate union with physiology, and by the progress of many branches of pathological anatomy.

It is time to introduce into the body of science the researches which have been made during some years past with regard to the seat and nature of fevers. A physician who would present the actual state of pyretology should take for his point of de-parture the work of Pinel. Every other plan, in place of af-fording new light to the practical physician, and offering a faith-ful guide to the student, placed between two different doctrines, would only disturb the ideas of the one, and place the other in a painful state of uncertainty, or occasion an unjust contempt of one or other of the two doctrines, or even, what would be more dangerous, give rise to the opinion, that medicine has no fixed principles, and is only a changeable product of the imagination. In the remarks which have just been made, we have pointed out the object and plan of this book.

I shall not confine myself to the province of the historian. I shall search for truth among the contending parties. Our object is not to advocate the views of particular professors, but to borrow from one his method of observation, and from another, his ideas upon the investigation of the affected organs,

and the alterations which they undergo. The truth of this grand principle is no longer contested, we shall not therefore stop to demonstrate that we must no longer confine ourselves to the study of the invasion, the symptoms, the course, the type, and termination of fevers.

The doctrine of sympathies presented by Hippocrates, disguised under the most fantastical forms by Vanhelmont, maintained with warmth by Bordeu, calculated by Barthez, developed and organized by the genius of Bichat, united with pathological anatomy by Broussais, has conducted the latter to the establishment of the following principles:

Every disease is primitively local;

Like the phlegmasiæ, all fevers are only local diseases;

All fevers are the consequence of gastro-enteritis. *

The first of these positions, and consequently the second, are incontestable; because,

1st. No morbific cause acts at the same time upon all the organs.

2dly. The symptoms never extend to all the organs.

3dly. The symptoms are never equally intense in all the organs.

4thly. In diseases which appear to be general, the disorder always commences at a single point, whence it extends to others.

5thly. No disease, how general soever it may appear to be, leaves characteristic traces in all the organs.

6thly. After sudden death, an examination of the body ordinarily shows, that the lesion of a single organ is sufficient to arrest the action of all the others.

It should then be admitted, that all the diseases to which we give the name of fever are primitively local, and, by analogy, those which destroy life instantaneously, as apoplexy does, an affection which no one thinks of ranking among general diseases.

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* On this subject, M. Broussais expresses himself in the following manner; viz.

When an organ is sufficiently irritated to light up fever, this effect is never produced except through the intervention of the united irritation of the heart and mucous membranes, and particularly of the gastric mucous membrane." Journ. Univ. des. Sciences, Med. t. viii. p. 143.

All the essential fevers of authors are to be referred to gastro-enteritis, simple or complicated." Deux. exam. t. I. n. 34.

But, in our opinion, all fevers are not to be attributed to gastro-enteritis, not even all those denominated essential, because,

1st. The causes of fevers do not act solely upon the gastro-intestinal mucous membrane.

2dly. Although this membrane often receives the direct or sympathetic influence of the febrile cause, in the former case, it does not always receive it alone, and in the second, it often receives it only in a very feeble manner.

3dly. Every organ, being like this membrane, capable of acting sympathetically on the heart, the vessels, the lungs, and the organs of secretion, upon the nerves, the ganglions, the brain, the muscles, &c., can, in like manner, occasion the development of the symptoms which we name febrile.

4thly. It is frequently the case that a careful study of the causes, and an attentive examination of the symptoms, demonstrate that the gastro-intestinal mucous membrane is sound, or too slightly injured to warrant the assertion, that it has provoked the development of the malady.

5thly. Sometimes, we not only do not find any trace after death in this membrane, but we discover profound lesions in other parts of the body.

To behold in fevers only an affection, *sui generis*, invading the whole economy, is totally at variance with the actual state of pathological anatomy, and physiology; but, I believe it is equally contrary to these two sciences, to lay it down as a principle, that there is no fever without inflammation of the stomach and intestines. These two opinions, diametrically opposed to each other, are very widely spread, because they are exclusive; and, consequently, calculated to please superficial and enthusiastic minds. It has been, and still is necessary to combat them. Between these two extremes, there are many other opinions, which I shall pass in review, and I shall point out those which appear to me to have the greatest semblance of truth.

Such appear to me the principles upon which should be conducted the study of fevers, in an investigation of their nature and seat; that is to say, we should inquire what organs are affected in these diseases, and what lesion they suffer, by a physiological analysis of the causes which determine them, the symptoms which characterize them, and the traces which they leave

after death.   This work is not devoted to polemical discussion; it is an exposition of what is taught with regard to the seat and nature of fevers, by phenomenology, etiology, physiology, and pathological anatomy: it is, in one word, *physiological pyretology;* in the sense which I attach to this expression, I give this work to the public, with the desire that the practitioner may there find the means of comparing the results of his clinical labours with the actual state of pathology, and may be enabled to proceed to a new series of observations, calculated to confirm or combat the new principles.   I likewise indulge the hope that it will prove a useful guide to students in their theoretical and practical studies.

A new era is commencing in medicine.   The edifice of science is not to be rebuilt, but additions are to be made to it, and many parts, which time has destroyed, are to be replaced.   It is to be desired, that each physician, anxious to contribute to the perfecting of the science of disease, should make himself master of a portion of the ancient pathology, compare with it the observations of his predecessors and contemporaries, and the results of his practice, arrange the whole according to the lights furnished by the most recent progress of pathological anatomy, and physiology, and present the facts of which we are possessed, in a manner corresponding to the actual state of the medical science.

CHAPTER II.

Of Inflammatory Fevers.

THE words, πυρετὸς ξυνεχης, so often repeated in the works that
bear the name of Hippocrates, do not indicate an *inflammatory
fever*, in the sense assigned to this expression at the present day,
but only a state of *continued burning heat*. It was only after
the lapse of time, that the name *synocha* came to designate the
species of fever, in which the inflammatory phenomena predo-
minate over all the others, and appear to extend to the whole or-
ganism. It has been denominated in succession, *synocha* or
continued, *simple* or *not putrid*, *continent*, *sanguine*, *in-
flammatory;* it afterwards received the name of *angiotenic*.
M. Recamier has given it the name of the *sthenic hématosic
fever*.

If we collect all that has been written upon the symptoms and
causes of this disease, we shall obtain the following description:
the invasion of inflammatory fever is ordinarily announced by one
or more of the following phenomena; viz., general malaise, hea-
viness, flushing of the face, nasal hemorrhages, dizziness, verti-
go, heat in the chest, palpitations, increase of appetite, succeed-
ed by inappetence, a sensation of weight in the abdomen, con-
stipation, interruption of the menses, of the hemorrhoidal flux,
ardor urinæ, painful weight in the loins, dryness of the skin, and
a sense of fulness, tension, and painful swelling of the abdominal
extremities, when the patient is standing. This state lasts one
or more days, sometimes a week or more.

The invasion is almost always sudden, even when it has been
announced by precursory signs. The subject suddenly expe-
riences towards the end of the night, or in the morning, a rigor,
which is sometimes slight or almost imperceptible, promptly
followed by heat of the skin; this heat, which is habituous
and mild to the touch, seems to diminish under the pressure of

the hand. The face is red and vultuous, (vultueuse,)* and the turgescence sometimes extends to the whole body, the surface of which sometimes presents a rosy tint; the eyes are brilliant and tearful, the conjunctiva injected, the eyelids tense and painful, the patient is troubled with dizziness and vertigo: objects appear of a red or very bright colour, a bright light offends the eyes, slight noises fatigue the ear, the nostrils are dry, the sense of smell becomes obtuse. A painful heaviness is felt in the head, particularly at its anterior part, and along the spine. The patient is prostrated, he sleeps little, and his sleep is interrupted by sudden waking and troubled by dreams; at other times, there is a state of somnolence; the intellectual faculties are sometimes disturbed; the extremities are, as it were, benumbed, or slight convulsive movements are perceived in them. The tongue is white or red, particularly at its point, and on its edges, always moist in the commencement, and when the disease is not very intense, the lips are dry, and there is a disagreeable taste in the mouth; sometimes there is thirst, slight nausea, and sensibility at the epigastrium; at other times, the patient complains of none of these symptoms: there is sometimes inappetence, sometimes a marked disgust for food, two states we must not confound; ordinarily, there is constipation. The pulse is generally large, full, strong, accelerated and rebounding; sometimes soft and concentrated, when the patient experiences intense pain in some part of the body; the carotid and temporal arteries often beat with force, and the veins are swelled; respiration is frequent, hot, and quick, without being painful. The urine is small in quantity, and of a deep red colour in the commencement of the disease; afterwards it is more abundant and turbid, and deposites a lateritious sediment.

These symptoms, which are never all observed at once, are more intense during the evening and night, than in the morning. After having lasted during twenty-four hours, two, three, four, seven, or fourteen days, they gradually diminish, without the occurrence of any evacuation; or there supervene general sweats, hot and abundant, hemorrhage from the nose in young persons, from the vulva in women, or from the anus in persons

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* This word is used to indicate the state of the face when it is red, and apparently swelled.

subject to hemorrhoids; an abundant flow of urine, with or without white sediment; sometimes mucous sputa; more rarely, copious dejections of matters resembling grounds; recovery then takes place in a few days; it occurs almost suddenly after a hemorrhage.

Convalescence is short and relapses unfrequent. This happy termination is not the most frequent; more ordinarily, many of the symptoms are observed to increase in intensity, to such a degree as to call for all the attention of the physician, and the disease is prolonged beyond a week, or even two weeks. It is then said that the inflammatory fever is complicated with a local inflammation, if there appear unequivocal signs of an afflux of blood, or of a phlegmasia in the head, the chest, or the abdomen, or in the skin, or the cellular tissue of the extremities, constituting apoplexy, arachnoïditis, encephalitis, angina, pleurisy, peripneumony, pericarditis, carditis, aortitis, angiotitis, hepatitis, gastritis, enteritis, nephritis, cystitis, an exanthem or phlegmon.

When the augmented intensity, and the symptoms which supervene do not appear to announce one of these inflammations, it is said that the inflammatory fever is converted into a *gastric, adynamic, cerebral, ataxic, ataxo-adynamic, yellow, typhoid or pestilential* fever, according to the character of the predominant symptoms.

The inflammatory fever then terminates in health or it changes its name, and it is thus that it is said never to occasion death but when it determines the inflammation of an important organ, or is converted into another malady.

Practitioners recognise three varieties of inflammatory fever; viz: 1st, *Ephemera*, the symptoms of which have little intensity, often terminates without evacuation, sometimes by a slight perspiration, a simple moisture of the skin, by fecal discharges or an inconsiderable hemorrhage, after having continued 20 hours, 1, 2, 3, 4, days or more; 2dly, *Synocha or inflammatory* fever, properly so called, the symptoms of which are very strongly developed, and which does not terminate without an evacuation, either occurring spontaneously or produced by art, and which lasts one or two weeks; 3dly, *grave synocha or inflammatory* fever, in which the pulse seems depressed at the same time that

it is hard, the limbs are benumbed, the prostration is extreme, and the tongue dry and brown. These varieties are only shades or degrees, or the result of the extension of the same malady. It is proper to mention them, but it would be irrational to confine to this division our analysis of the symptoms of inflammatory fever.

These three varieties of inflammatory fever differ not only as it regards intensity of irritation, but as it regards the seat of disease. In one of them, for example, the third, the heart is more strongly affected than in the two others; perhaps it is even inflamed in this variety, whilst in the two others, and particularly in the first, it is only irritated, strongly sur-excited.

Inflammatory fever is most frequently sporadic, but it may likewise affect a great number of persons at one time, in the seasons and in the countries which favour its development, and thus become epidemic or endemic.

With regard to the prognosis, we must say with Pinel, that it is always favourable, with the exception of the cases in which the symptoms increase in intensity in any particular point of the organism, in such a manner as to threaten a phlegmasia, or such a violence of febrile reaction as may occasion death.

For a long time the manifestation of the symptoms of inflammatory fever was attributed to a superabundance of the blood, or only of its red part, to the friction of this liquid against the walls of the vessels, to a spasm of the small vessels of the skin, or to tension of the vascular fibres. At the present day there is but one opinion with regard to the nature of this fever. All agree that the phenomena which characterize it, depend upon a *sthenia*, an *excitation*, an *irritation*, an *angiotenia*, a *hyperemia*, or an *inflammation*, synonymous words, which designate an excess of vital activity in the affected part or parts; whence arise, exaltation of sensibility, pain, acceleration of pulse, the temporary suspension of some secretions and augmentation of others, weakness or oppression of muscular force. We shall not here stop to examine how well founded are the arguments of the physicians who admit an essential difference between the *irritation* which determines an *essential* fever, and the *inflammation* which gives rise to a *symptomatic* fever: what is to be said upon this subject will more properly find its place in the chapter appropriated to

the comparative study of the essential and symptomatic fevers. Another course could not be followed without giving rise to repetitions on the occasion of each fever.

If there be a general agreement with regard to the nature of the lesion, which gives rise to the symptoms of inflammatory fever, this harmony does not equally exist with regard to the seat of this lesion. Some physicians, judging from the aspect of the patient superficially examined, think that the lesion occupies the totality of the body, although there is not always, and in every part, an augmentation of action, since the secretion of urine is at first suspended, the muscles contract with difficulty, the pulse is sometimes soft, concentrated, and small, and the cerebral functions less active.

Many physicians, while they admit a universal irritation, acknowledge that it is more manifest in the sanguine system, considered in a general manner; others limit it to the arteries, some to the heart, some to the great vessels, many to the sanguine capillary systems. It is considered by some as involving the whole circulatory system, but the general and uniform irritation of all the organs is not less chimerical than the *temperamentum temperatum*. M. Broussais asserts, that it occupies, primitively and specially, the mucous membranes, particularly the gastric mucous membranes. M. Alard places it in the skin and sub-cutaneous cellular membrane. *

" Synocha," says Brown, " is nothing else than a phlegmasia, composed of a sthenic diathesis, insufficient to light up an inflammation, and of a pyrexia; what is peripneumony, rheumatism, or any other phlegmasia, but a synocha, with a diathesis sufficiently strong to produce an inflammation?" " What," says Tomasini, " is synocha, but a slight degree of phrenitis, of angina, or of rheumatism?" Reil attributed synocha to an exaltation of the irritability of all the sanguine vessels, arterial and venous, with integrity of action.

In the epidemic of Nantz, Bagard proved by post mortem examinations that the prevalent inflammatory fever was but a pericarditis. J. P. Frank ascribed inflammatory fever to irritability and augmented action of the heart and arteries. In violent inflam-

* Du Siége et de la Nature des Maladies. Paris, 1821. in 8vo. tome II. p. 28.

matory fevers, with extreme agitation of the heart and vessels, he remarks, '' We have, for the first time, observed a deep and inflammatory redness on the internal surface of these vessels, and even of the whole venous system; we have had many opportunities of showing, under the same circumstances, partial phlogosis, commencing with the aorta." In the pathological part of the article *Heart*, of the *Dictionnaire Abrégé des Sciences Medicales*, I made the following remarks in 1821, viz.:

'' The irritation of this organ has hitherto been described under the name of simple fever, of inflammatory fever, or ephemeral synocha; it is found in the highest degree in synocha, properly so called, and in all the fevers characterized by the symptoms of an acceleration of the circulatory movement." M. Bouillaud, in his interesting Treatise on Diseases of the Heart, published in 1824, does not hesitate to say that there almost always exists an irritation more or less considerable of the aorta, whenever a fever of an extremely violent character is developed, but that in this case it is not only the aorta, but the entire circulatory system, and the heart itself, that partakes of the irritation. He has observed the red *ramollissement* of the heart, after graver fevers of a very violent character. M. Bouillaud thinks that the seat of inflammatory fever is in the system of the heart and sanguine vessels.* '' This disease consists essentially," says he, '' in an inflammation or simple irritation of the circulatory apparatus; it bears the same relation to this apparatus in general, that a local phlegmasia does to the sanguine capillaries of the organ in which it is seated: the latter is, so to speak, but a local fever, while the former is a general one. What proves, according to him, that this comparison is correct, and that the facts in these two cases are identic, is, that the former in the majority of cases, is derived solely from the extension, the generalization of the latter, that is to say, it is a local phlegmasia, which has become general, either through the intervention of sympathy, or in some other manner; whence he concludes, that inflammatory fever is nothing but fever, properly so called, considered in a general and abstract manner. M. Bouillaud has examined with much care the redness presented by the internal surface of the heart, the arteries,

* Traité Clinique des Fievres.   Paris, 1826, in 8vo. chez J. B. Balière.

and the veins, in an extent more or less considerable; he regards them as appearances peculiar to inflammatory fever, either simple or complicated, with some other phlegmasia. "As to the alteration of the blood in inflammatory fever, we only know," says he, "that blood taken from the veins, is hotter, thicker, and more coagulable than in health; that it is almost immediately covered by a grayish or whitish crust, of variable thickness, and known by the name of the inflammatory crust. To support these opinions, he cites three cases, in which the subjects, having presented symptoms of inflammatory fever, there were found traces of phlegmasia in the heart and aorta, in the first and second; in the heart, the arteries and the veins, in the third. But the first presented, likewise, traces of meningitis and bronchitis, and the lungs were gorged with blood; the second presented traces of pleuropneumonia; the stomach and duodenum, as well as the small intestines, exhibited traces of inflammation in the third. There is no doubt that inflammation of a part of the sanguine vascular system, particularly if it be of any extent, may give rise to the phenomena of inflammatory fever. But it cannot be denied that these same phenomena may be produced in a subject, possessed of exquisite sensibility, or of great vascular energy, by a local inflammation of slight intensity, and very limited extent, by the mere propagation of irritation to the heart, without the existence of a real phlegmasia during life, and without the appearance of redness after death, in the irritated part of the vascular system. Nor is it at all necessary that irritation should extend itself gradually until it reaches the heart. Through its nervous connexions, it may be sufficiently excited to beat more frequently than in its ordinary state.

According to M. Andral, the red tint presented by the internal surface of the heart and the vessels, in subjects who have fallen victims to continued fevers, has nothing to do with the production of any of these fevers; it does not even contribute to the production of any of their symptoms; this red tint is found indifferently at the termination of all diseases, after those accompanied by fever, as well as those unattended by it; it should be considered as a phenomenon belonging to the dead body, the more or less rapid production of which depends on certain conditions, which may all be resolved into a single one: the ten-

dency of the body to a more or less rapid putrefaction.* Fur-
thermore, M. Andral has only six times observed the redness of
the heart in eighty-six subjects, who had died with all the symp-
toms of grave fevers. M. Bouillaud has found this alteration
eleven times in forty-nine examinations; as it respects the ves-
sels, their redness is mentioned by M. Bouillaud eight times in
the same number of cases. M. Louis found an unusual redness
in the heart, three times, and in the aorta twenty times in fifty-
four subjects.† From the circumstance of this redness being
observed after various diseases with or without fever, M. An-
dral concludes that it is unconnected with a morbid state. Yet,
when we consider that it has been found eleven times in thirty-
two cases of organic lesions of the heart, it is evident that the
tendency to putrefaction does not account for it so clearly as he
appears to think. The vivisection of animals during acute ma-
ladies, attended by fever, is indispensable to the solution of this
problem.

Researches of this kind are the more desirable, since M. An-
dral, notwithstanding the very decided language of the proposi-
tions, which we have just cited, has since declared, that the red-
ness of the heart might occur during life, and be connected with
an active or passive afflux of blood to this organ. He was con-
vinced of this by the examination of horses, affected during the
epizootic malady, in 1824; and which he opened immediately
after they were killed. MM. Dupuy and Boulay had previ-
ously made similar observations; and it may be observed, that
this redness did not present any very marked difference from
that produced after death, by exposing the heart of a horse to
the air or sun. Furthermore, M. Andral found a lively redness
of the internal membrane of the right cavities of the heart, in
a subject who had died after symptoms of pericarditis, such as
sudden attacks of suffocation, palpitations, &c.; in another, after
having presented symptoms of hypertrophy of the heart; and,
finally, in others, who, affected with disease of the heart, had
died in the midst of an exacerbation, which had suddenly su-
pervened. It is evident, therefore, that M. Andral was in er-
ror, when he asserted that the redness of the circulatory passages

* Clinique, 1830.
† Recherches Anatomique. Paris, 1829, in 8vo. chez J. B. Ballière.

always took place after death. His critique of the opinion of M. Bouillaud, went beyond the truth.*

M. Andral asserts, in the same work, that inflammatory fever often seems to recognise no other point of departure than blood too rich in fibrine; that this fever is often only an effect of a general sanguine congestion of the gastro-pulmonary mucous membrane.

It is proper that the ideas of this author should be mentioned; they are remarkable for the uncertainty which characterizes them, and which forms a singular contrast to the solidity of his anatomical labours.

According to M. Gendrin, the examination of those who have succumbed in inflammatory fever, or fallen victims to a grave phlegmasia which it has determined, discovers in every case, organs more or less affected in their structure, most frequently the lungs, and very frequently, also, the gastro-intestinal mucous membrane are the organs which suffer.

It is farther necessary that there should be a large and very complete collection of facts, to enable us to decide whether the whole sanguineous system can in reality be inflamed; it will then be proper to inquire what point of this system is the focus of inflammation. The only principles, which, in our opinion, can be laid down upon this subject, are the following, viz.: the more hard, full, frequent, and quick is the pulse, the more reason is there to suspect inflammation of the right cavities of the heart, and of the large arterial trunks; when to these phenomena, we see succeed those which have been designated under the name of false adynamic fever, without symptoms of gastro-enteritis, we have reason to suspect that the inflammation extends over the whole heart, that it has become more profound in the tissue of this viscus, or even that it extends to a part of the venous system, according to the opinion of M. Ribes, who supposes adynamy to depend on phlebitis.

It is difficult to pronounce in a positive manner upon this point of doctrine, on account of the limited number of facts possessed by each observer. When a greater number of facts shall have been accumulated, caution will be necessary, lest we fail to notice organs inflamed simultaneously with the heart and vessels.

* Precis d'Anatomie Pathologique. Paris, 1830.

This, at least, is certain, that there are inflammatory fevers, in which one part only is affected, whilst in others, especially in those which reach a very high degree of intensity, the irritation extends to many organs, as has been very judiciously remarked by Reil: this is easily proved by an analysis of the causes and symptoms of inflammatory fever.

An abundance of blood, rich in fibrine, is one of the circumstances most favourable to the development of the irritation, more or less extended, which determines the diverse morbid states, collectively designated under the name of inflammatory fever. It is caused by an excess of alimentation, or by the predominance of the lungs, which is recognised by the florid complexion and skin, the amplitude of the chest, and the force and fulness of the pulse.

The fulness of the capillary vessels of a single organ, is also a circumstance favourable to the development of the irritation which produces synocha. This primitive local plethora is often found in subjects who are considered weak and languishing, because they are pale and thin. It is in these subjects that we find cerebral plethora, when they apply themselves assiduously to study, or when they suffer from mental anxiety; pulmonary plethora, when the structure of their chests, and the confirmation of their lungs predispose them to it, particularly if they indulge to excess in the pleasures of venery. Abdominal plethora occurs in persons, and particularly in infants, who eat voraciously and make use of too substantial a diet; uterine plethora in girls, who have not yet menstruated, and in women, at the period of the cessation of the menstrual discharge. Secondary local plethora is observed when persons, who are habitually in a state of general plethora, accidentally stimulate one of their organs.

The circumstances which prepare, favour, or determine the development of the irritation which constitutes synocha, are the following, viz., youth and adolescence, periods of life at which the blood is more exciting, and the tissues more excitable, the period of puberty in boys, and particularly that of the commencement of menstruation in girls, the suppression of hemorrhages, and habitual evacuations, natural or artificial, which gives rise to an accidental plethora, or prevents its removal; prolonged

watching, excessive study, mental disquietude, which acts upon the brain, and causes a continual afflux of blood to it; prolonged and rapid running, singing, and crying aloud, which strongly excites the organs of respiration; the impression of substances which strongly stimulate the digestive passages, or any other part of the mucous membranes; the sudden cooling of the skin when it is hot and moist, which necessitates a vicarious action in the mucous membranes; insolation, and every thing capable of irritating the skin; the sudden disappearance of affections of this tissue, which, according to the experience of all times, influences the internal organs; finally, wounds, contusions, and all mechanical lesions, which divide, tear, or irritate the skin, the cellular tissue, the parenchymatous structure, the membranes, the muscles and the bones.

None of these morbific causes, predisposing or occasional, are the result of an action which affects the whole of the body. The predisposing causes reside in the sanguineous system; they result from a nutrition, operated by digestive organs, endowed with too great rigour.—If general plethora be developed in this case, it cannot be said that it is in consequence of a gastritis; for the stomach is not excited beyond its physiological condition, as long as its functions are performed without embarrassment, pain or languor. Besides, general plethora alone is never capable of determining synocha; it is necessary that an afflux towards some particular organ be established, for these symptoms to manifest themselves; it is necessary that the equilibrium be deranged, from which health results, and this equilibrium cannot be deranged but by a great natural excitability, or the accidental sur-excitation of an organ. Now, it will be seen, on the slightest reflection, that the occasional causes which have just been pointed out, act upon some organ in particular. All the organs being connected with each other, and with the heart, by means of vessels and nerves, the morbific impression acts first upon an organ, which sometimes communicates it, as it has just been remarked, to the centre of the circulation; and sometimes to another organ, through which it is transmitted to the heart. In these two cases, the organ primitively affected, often ceases to be so, after having transmitted the morbific influence to another; the same thing sometimes occurs in the case of the organ

which has secondarily received this influence, so that the circulatory system appears to be, and sometimes in reality, is alone affected in these instances; and this has occasioned the seat of the affections, confounded under the name of inflammatory fever, to be placed in this system.

Sometimes the morbific cause seems to affect more especially, the lining membrane of the great vessels, and this is one of the causes in which the circulatory system is alone affected; but it would be incorrect to have in view only such cases, which perhaps are not so common, as they are thought at the present day, which moreover are but little known, and which do not exclude the morbid state of another tissue.

When the stomach has received, primitively or secondarily, the impression, and it ordinarily receives it simultaneously with the heart, on account of its intimate connexion with all the other organs, it retains it in part even when it influences the heart and sets it in motion.   It is then often affected in synocha, but this is generally to a very slight degree, and it would be very wrong to pay exclusive attention to it, because there would be a risk of overlooking the morbid state, often more important, of other organs.

An examination of the patient, proves, according to M. Broussais, that the capillaries of the skin, those of the cellular tissue and of the articulations, are not in a state of phlegmasia. If they were, we should have, he remarks, either the symptoms of erysipelas, or those of the other cutaneous phlegmasiæ, or of phlegmon in general, or the signs of rheumatism or gout.   Such is the error, into which all pathologists fall, who deny the existence of inflammation, unless when the symptoms are so evident, that it would be folly to dispute them.   It may be admitted, that in inflammatory fever, there is not precisely what is called erysipelas, phlegmon, rheumatism or gout.   But in certain inflammatory fevers, caused by insolation, or by a forced, or rapid, or long continued march, it is evident, that there is intense irritation, even inflammation, of the skin, the sub-cutaneous and inter-muscular cellular tissue, and the articulations; since the skin is red, hot, and painful, especially when touched; since there is a sensation of heat in the articulations, which are painful, especially when the parts which form them are put in motion.

M. Broussais, forgetting that it is the part of the pathologist to seize the most fugitive shades of irritation, asserts that in inflammatory fever there is no sign of inflammation of the brain, the chest, the peritoneum, the liver, the spleen, the kidneys, or the arteries: he is correct, if he refers to the signs of inflammation ordinarily recognised by authors. But the irritation of the digestive mucous membrane has not exclusively the privilege of confining its development to the obscure degree, which suffices to determine the phenomena of inflammatory fever. The same authors, who have overlooked the slight shades of gastritis and enteritis, have likewise overlooked those of the phlegmasiæ, or, if the expression be preferred, of the irritations of the other viscera, and M. Broussais himself is chargeable with this oversight.

The description of inflammatory fever, given by nosologists, is not very favourable to his opinion; for we there find few symptoms, which can be referred to gastritis, or enteritis, while we observe very marked symptoms evidently attributable to irritation of the encephalon, the uterus, the muscles and articulations. In vain might M. Broussais assert that this irritation, how manifest soever it may be, is but the index of a *latent* gastric irritation: this would be to subordinate what is evident to what is to be demonstrated. We assert that nothing demonstrates that the inflammatory fever of authors is always a gastro-enteritis: 1st, because there is not, in all inflammatory fevers, thirst, redness of the point and edges of the tongue, epigastric sensibility and pain, which are the unequivocal signs of gastritis; 2dly, because anorexia does not constantly exist in this fever, and even if it always existed, it alone could prove nothing, for simple inappetence is not an infallible sign of gastritis; 3dly, because the cephalalgia in synocha often exhibits other characters than those of the cephalalgia produced by inflammation of the stomach; 4thly, because the contusive pains and the inaptitude for exercise in the locomotive muscles may depend on encephalitis as well as on gastritis.

When redness of the edges and point of the tongue, a disgust for food, and thirst occur, there is undoubtedly gastritis; but it remains to be decided whether the irritation of the stomach is primitive or secondary. M. Broussais affirms too positively that encephalic irritation always determines that of the digestive vis-

cera. It is well known to all practitioners that gastric irritation very frequently gives rise to encephalic irritation. If it be important in all diseases to know the organ primitively injured, it is no less useful to discover it in the case under consideration.

In what manner can we resolve our doubts when a number of viscera appear to be irritated in inflammatory fever? By an attentive study of the organic predisposition of the subject, his idiosyncrasy, and the mode of action of the morbific causes, to which he has been subjected, as well as of his morbid predisposition, at the moment they acted upon him. In this manner we shall be enabled to decide what organ received the first morbific impression, to what organ it has been transmitted, and, finally, what organ has received and retained it. We shall know in this manner what is the *painful mobile*, (douleroux mobile,) to use the language of M. Broussais, which produces all the symptoms by its more or less extended influence over the organism. The circumstances in which the subject has been placed, previous to the invasion of the disease, will indicate in some sort, the progress of the morbific action; the symptoms will indicate the part in which this action is fixed.

We have just seen, that among the causes of inflammatory fever, some act particularly upon the brain, some stimulate the muscular system, and the articulations, some accelerate the action of the lungs, and that there are some, which actively irritate the stomach or the skin.

These causes do not always confine their influence to the organs upon which they specially act; for example, a violent fit of grief may not affect the brain so violently as to throw it into a state of disease, while nevertheless it affects it sufficiently to give rise, through it, to a sympathetic gastritis. In this case the organic predominance, the peculiar morbid predisposition, finally, the nature and seat of the symptoms, which are most intense, will be sufficient to enable us to recognise the organ, in which the morbific influence has definitively fixed itself: if it be necessary to discover the organ primitively affected, it is not less important to know the organ which is most affected.

In most of the inflammatory fevers, we find force, frequency, fulness, and quickness of pulse, and a halituous (halitueusè) heat of the skin. These symptoms, which indicate that the irritation

has been transmitted to the centre of the circulatory system, are
generally more easily recognised, than those which indicate the
organ or organs principally affected: they are the expression
of what is denominated general reaction, and the result of the
connexion which associates all the organs with the heart and ar-
terial system.   These are the symptoms which have given rise,
sometimes, to the opinion that this system alone was affected in
synocha, and at other times to the belief that there was a lesion
of the whole economy in this disease.   But the arterial system
does not constitute the whole of the economy, and even when
it is the first to manifest its morbid state, it would be wrong to
conclude that it was the first affected, or it will be necessary to
admit that peripneumony, when it is first announced by symp-
toms of a lesion of the arterial system, is nothing else than sy-
nocha.   When the symptoms which denote irritation of the
heart and the arteries appear to exist alone, it is, at least most
generally, because the point which has suffered, is not sufficient-
ly affected to occasion very marked local symptoms, although suf-
ficiently so, to excite the action of the heart.   When these symp-
toms cease promptly, before we are able to discover in what or-
gan irritation commenced, as sometimes happens in ephemeral
fever, we can have little reason to lament our ignorance on this
point, since the disease is benign and its duration short.   But
when the local irritation arrives at a certain stage, it is impor-
tant to recognise its seat, and this is easily accomplished.

   If the encephalon retain a large share of the irritative morbi-
fic action, the eyes are red, tearful, and sparkling; the patient
cannot bear the light; there is tensive pain over the whole extent
of the cranium, or only along the sinuses, before and behind,
and particularly at the temples; the temporal arteries beat with
such force as to be audible to the patient; the face is red, or it
becomes red and hot by sudden flushes, and there is tinnitus
aurium; the ears are affected with a sense of fulness; the nose is
dry, and its internal membrane more red than ordinary.   The
pulse is quick and full, and has but little frequency, the tongue is
white, the appetite is gone, there is no thirst and no disgust for
food.   After three, four, five, or six days, these symptoms
diminish; a nasal hemorrhage frequently supervenes.   If the
irritation continues, all the symptoms are exasperated, and the in-

tellectual faculties become troubled: but in this case, in the medi-
cal language of the present day, the disease is no longer syno-
cha, but a cerebral ataxic fever; or, if the symptoms of encepha-
lic irritation predominate, and are so manifest that they cannot
be mistaken, the disease is an encephalitis or a meningitis.

The augmentation of the intensity of the cerebral symptoms
can only announce an increased intensity of the internal morbid
state, and not the development of a different disease.   This re-
flection applies to the following shades of synocha.

Plethora, conjoined with the stimulating action of excessive
atmospheric heat, one of the principal effects of which appears
to be the acceleration of the pulsation of the heart; the active
stimulation of this viscus by a copious repast, although it may not
give rise to irritation of the stomach; a vivid mental emotion,
the effect of which, not being confined to the brain, exercises a
special influence over the heart, and finally the energetic excita-
tion occasioned by the plethora, resulting from the ligature of an
arterial trunk, are all circumstances which influence the heart in
a particular manner.   This organ beats with more force and
frequency than usual; the pulse is quick, frequent, large and
strong, flushes of heat are experienced in the head, the chest, and
the abdomen: the patient suffers from a sense of general fulness,
oppression, and stupor.   The heat of the skin is augmented; it
is neither pungent nor *halituous*, (halitueusè,) the tongue pre-
sents no change, there is no thirst and no disgust for food, but
simply a want of appetite.   This state continues one, two, three
or more days, unless some other organ, besides the heart, be-
come irritated in such a manner as to add to the stimulation of
the latter organ.   A slight perspiration generally announces the
termination of a disease, which presents the most simple aspect
of fever, under which it has ever been described.   Authors have
designated this state by the name of the *effect of fulness of
blood*, when it supervenes after the ligature of a principal artery.
When this slight carditis is not owing to the contraction of the
arterial system, the attempt has been unsuccessfully made to dis-
cover the organ, the irritation of which provokes the develop-
ment of these symptoms, because the obvious idea, of examining
the heart, does not present itself.   Galen perceived the impor-
tant part which this organ performed in the manifestation of the

febrile symptoms, for he defined fever in the following manner, viz: *an extreme heat developed in the heart, and extending thence over the whole body.*

When the irritating causes have exercised their influence in the first place on the stomach and intestines, or when they have extended their influence to these viscera, without involving other organs in the irritation; in one word, when the stomach and intestines are primarily or secondarily irritated, we observe intense thirst, a redness of the edges of the tongue, disgust for hot drinks, and for food, particularly of a rich kind, a sense of weight and pain at the epigastrium; at least, when pressure is made upon this part. To these local symptoms are joined the following sympathetic ones: a hard, quick and frequent pulse, a lancinating pain above the orbits about the frontal sinuses, contusive pains in the joints and in the limbs; a pungent heat and dryness of the skin. This state lasts from two to four days, or is prolonged till about the seventh day, unless some remedial measures are resorted to. A favourable termination is announced by a diminution of the symptoms, by a discharge of urine, a diarrhœa, a sweat, and sometimes by a nasal hemorrhage or the appearance of hemorrhoids in individuals who are subject to them. But more generally, from the third to the fourth day, we observe the supervention of the symptoms of gastric, ady-namic, or ataxic fever, which will be treated of in the following chapters, or those of gastritis as described by authors of the last age.

When a slight bronchial irritation, or an inflammation of the lung of little intensity, gives rise to the symptoms common to all synochal fevers, we recognise the organ principally affected by the embarrassed respiration, the shortness of the inspirations, the sense of heat referred to the chest, and by the sudden and transient pains in the sides of this cavity—pains to which the patient pays but little attention, unless when questioned; and, finally, by the cough which recurs from time to time. The pulse is frequent, large, full, often soft, the skin presents a *hali-tuous* heat. A slight perspiration, or a copious sweat, announces the termination of the disease, which rarely persists longer than three or four days, without manifesting unequivocal symptoms of bronchitis, pneumonia, or pleurisy.

Under the name of *milk fever* has been designated the ephe-

meral synocha, which arises from irritation of the mammæ, af-
ter delivery, when these organs, stimulated sympathetically by
the uterus, begin to secrete milk.   The swelling of the mam-
mæ, which become hard and sensible to the touch, the heat, op-
pression, and even pain experienced in these parts, sufficiently
indicate the organ, whose irritation excites the contraction of the
heart, and gives rise to symptoms of synocha. Gastric irritation
often accompanies that of the mammæ, but it is generally of lit-
tle intensity.

Synocha, occasioned by irritation of the uterus, is character-
ized by a sense of weight in the lumbar region, whence the pain
extends into the hypogastrium and the vagina; by a distressing
weight about the uterine region; by pruritus in passing the urine;
by rigors returning at intervals, and followed by a disagreeable
sense of heat, which from the abdomen extends over the whole
body, and particularly to the head; by a numbness of the thighs,
and of the inferior extremities, which are sometimes painful, and
by somnolency. To these symptoms are united a full and bounding
pulse, the tongue often presents no change; there is no appetite,
although there does not exist a disgust for food; there is little or
no thirst; the skin is hot and moist.   The menstrual discharge,
or a metrorrhagy, more or less abundant, often a copious sweat,
or a discharge of sedimentous urine, sometimes a nasal hemorrhage
announces the termination of this state, which only continues
six or seven days, and frequently terminates before the fourth.
The symptoms sometimes assume an intensity, which prevents
all mistake as to the existence of metritis.

An irritation of the kidneys, or of the internal membrane of
the bladder, may give rise to an inflammatory fever.   We re-
cognise the first by a sense of weight in the lumbar region, by
repeated rigors, by the suppression or the scantiness of the
urine, by the painful and repeated discharge of urine, which is
voided in small quantities at first, but afterwards copiously, and
sometimes carries with it calculi.   The signs of the second are
tensive pain in the hypogastrium, a continual desire to pass the
urine, a painful and repeated discharge of it, which is passed in
but small quantities.   This last species of synocha terminates
sometimes by the discharge of abundant mucosities by the ure-
thra, and oftener by a copious sweat.

When the skin is more irritated than any of the other organs, it is hot and of a rosy colour; it appears swelled or raised by the subjacent cellular membrane; pressure occasions uneasiness, and even pain in it; it is at first dry and rough, and afterwards co-vered with an abundant and hot sweat; the patient experiences a disagreeable sense of tension, on the surface of the body, as well as in the head. The pulse is very quick and frequent; the urine is scanty in the commencement, and abundant when the skin returns to its normal condition. A diaphoresis gene-rally announces the termination of the disease.

The inflammation, and the pain in the articulations, in the muscles, in the parts divided by any instrument of violence, or by a surgical instrument, sufficiently indicate the seat of the ir-ritation, which occasions the acceleration, the frequency, and quickness of pulse in the synocha, which accompanies con-tusions and wounds, or is occasioned by a forced march, a resi-dence in a damp or cold place, the influence of which is princi-pally felt by the synovial membranes, and the fibrous and muscu-lar tissues.

The synocha produced in this manner, continues as long as these causes continue to act; it ceases with them, and may be prolonged several weeks. The irritation, may, also, by in-volving a number of organs, give rise to the phenomena of gas-tric and other fevers, as we shall show in treating of traumatic fever.

It is deemed superfluous to point out, in this place, the signs which announce that an inflammatory fever is caused by oph-thalmia, laryngitis, otitis, hepatitis, splenitis, pericarditis, &c. It would be necessary to pass in review all the inflammations: there are some which it would be impossible to mistake at the first glance. Others, are too obscure to be distinguished before they have attained such a degree of intensity, that the disease loses the name of inflammatory fever, or they do not generally develop themselves but in conjunction with a more important ir-ritation.

Where the conviction is thoroughly entertained of the neces-sity of discovering the organ whose irritation is the principal source of the symptoms, with a view to prevent the conversion, as they say, of the inflammatory fever into a more grave one

or into a dangerous inflammation; in other words, to prevent the aggravation of the primitive inflammation, or its extension to several important organs, nothing will be neglected that may conduce to the success of this investigation; the difficulty of which is peculiarly great in the case of infants, owing to their incapacity to describe their feelings.

I have observed the symptoms of inflammatory fever in two infants at the breast, one of whom was suffering from otitis, and the other from cystitis. I did not recognise the first of these diseases, until after the discharge of a puriform matter from the external auditory passage. The painful and repeated discharge of urine induced me to suspect the second, all doubts of which were entirely removed on observing the little patient whom I .attended with M. Regnault, pass by the urethra a false membrane, and a turbid whitish urine. The child affected with otitis, incessantly tossed his head on the pillow; and always endeavoured to lie on the affected side; but my attention was not drawn to this symptom until after the discharge from the ear. I had directed the application of leeches to the temples of this infant, considering the symptoms as derived from a cerebral irritation. Leeches had been applied to the abdomen of the other, and he had been several times plunged into an emollient bath. They both recovered.

Should it be remarked that I have just described the first effects of encephalic, gastric, or bronchial irritation, and not inflammatory fever, I should reply that no pyretologist would refuse to recognise the inflammatory fever in these cases of disease, which nature every day presents to our eyes; as could readily be demonstrated by a reference to the cases collected by P. Forrest,[*] F. Hoffman,[†] Pinel,[‡] and M. Recamier.[§] M. Navieres states, that in 1802, there prevailed, during the autumn, an epidemic inflammatory fever, in the commune of St. Martin des Champs, near Mantes. Whenever this disease attacked subjects of a bilious or phlegmatic temperament, or those, who being of

* Observ. et Curat. Med. Paris, 1650, in 8vo.

† *Opera Omnia*, Genève, 1748, in folio, vol. ii. p. 106, 115.

‡ *Medicine Clinique*, Paris, 1815, in 8vo. p. 19.

§ F. Aygaleng, *Dissertation sur la Fievre Angiotenique*, Paris, an. viii. in 8vo.

a sanguine temperament, or suffering under the suppression of a hemorrhage, had been bled once or twice, the following symptoms were observed, viz: headache, more or less acute, beating of the temporal arteries, tearful eyes, animated face, a moist tongue, white or red; general lassitude of the limbs, pain in the loins, an halituous or moderate heat, a pulse full, strong and well developed; red urine, insomnolence, no perceptible exacerbation, cough without expectoration, deafness, diarrhœa with colic; from the fifth to the sixth day, no headache, but a heaviness of the head.

The case was different in the instances in which blood-letting had not been practised; to the preceding symptoms were joined the following, from the tenth to the fifteenth day; face puffy and erysipelatous, pulse small and concentrated, moderate heat or a dry skin, slight delirium, drowsiness, dryness of the tongue, ardent thirst, complete deafness. One or two bleedings, practised at this period, according to the constitution of the individual, sometimes calmed the symptoms; but where the irritation of the vascular system was extreme, either in consequence of the suppression of an habitual hemorrhage, or of injudicious treatment, (repeated purgation, wine, rich soups,) the disease assumed a third period, marked by the following symptoms, viz: tongue covered with dry and grayish black scales; oppression, furious delirium, pulse small and concentrated, partial sweats, sometimes obstinate constipation, and meteorism; aphthæ, face bloated and pale, a circumscribed redness of the cheeks, when there is a complication of pneumonia; the neck and one of the arms, very large, tense, shining, erysipelatous; paroxysm in the evening, during which the face was animated and the delirium still more furious. The patients asked for cider, apples, cheese, answered with propriety questions addressed to them, but in the most laconic manner: they frequently wandered from the subject, and it was necessary to repeat inquiries very often before an answer was obtained.

In these cases the disease did not terminate until from the thirty-first to the thirty-seventh day. Sometimes, at the commencement of convalescence, there supervenes a phlegmasia, such as an inflammatory swelling of the side of the face, or a peripneumony. This epidemic attacks indifferently all ages and sexes.

Of 554 inhabitants, 150 were affected.   M. Navieres lost an in-
fant two years of age on the thirteenth day, a boy of seven years
on the thirteenth, a girl of nineteen on the sixtieth day, and a
woman aged 57, on the fifty-second day.   This disease had car-
ried off from thirty to forty persons in the preceding years.   He
employed blood-letting from the commencement of the attack,
when the subjects had suffered a suppression of an habitual he-
morrhage; at the second period repeated blood-letting sometimes
did not arrest the progress of the disease.   The drink was acidu-
lated barley water, sorrel water, veal or chicken water, infusion of
mallows, nitrous whey, occasionally a light decoction of tama-
rinds.   Emollient lavements were prescribed.   In the second and
third period, any diluent nitrous emulsion, pediluvia, and wine
and water at the termination.   A single time, sinapisms and blis-
ters were employed; it was in a case of suppressed diarrhœa;
the chest and the brain were threatened; the patient lay for the
space of half an hour without exhibiting any sign of life. *

    It is to be regretted that no post mortem examinations were
made in the few cases of fatal termination.   This account is ne-
vertheless interesting, particularly in consequence of the care
with which the author has marked, in the exposition of the
symptoms, the influence of the treatment upon their appearance
and their intensity.

    If from the general description of this epidemic we descend
to the description of particular cases, to which we would refer
the reader, the first presents us with an irritation of the bronchia,
which in consequence of a purgative, extended to the stomach
and intestines; the second, an irritation of the bronchia, of the
stomach, and the arachnoid membrane; the third a gastro-bron-
chial irritation; the fourth, a gastro-arachnoid irritation, and a
fatal pneumonia; the fifth, a gastro-bronchial irritation; the sixth,
a fatal gastro-enteritis; the seventh, an entero-bronchitis; the
eighth, a similar irritation of greater intensity; the ninth, an
enteritis; the tenth, an inflammation of the stomach, of the pe-
ritoneum and the bronchia; finally, the eleventh an entero-bron-
chitis.   It must not be forgotten that this diagnosis is founded
upon a statement of cases necessarily incomplete, since, at that

    * Dissertation sur une Epidémie de Fièvres Inflammatoires, Paris, 1804,
in 4to.

period, the obscure shades of these inflammations were not known; which probably occasioned many of their characteristic phenomena to be passed over unobserved.

Were I to enter upon a detailed analysis of the cases collected by Hoffman, by Stoll, and by Pringle, it would be easy to demonstrate that in every case there was a predominant irritation of one or more organs. Sometimes, says Pringle, we do not remark that one part is more affected than another; we only perceive some general symptoms of inflammation, and we then call the disease simply, inflammatory fever; although in these cases it is probable that some of the more indolent parts of the system are inflamed.

The diverse irritations of little intensity, the phenomena of which I have been pointing out, are not always isolated. The irritation of the heart occurs in all inflammatory fevers, whatever may be the organ primitively irritated ; very often gastric irritation coexists with it, and, in many cases, the irritation of the encephalon manifests itself at the same time. Then the fever presents the greatest number of symptoms, which have been assigned to it, as pathognomonic signs. The cardiac irritation gives no ground for apprehension, except as it may provoke, keep up, or increase the irritation of another organ; but even in this case, there is still an organ to which the physician must more particularly direct his attention, and it would be as dangerous as irrational, to combat only a general irritation, that is to say, blindly employ the antiphlogistic treatment. It remains for me to point out the relative frequency of the principal irritations which may give rise to the phenomena of these fevers. The digestive apparatus being most exposed to morbific causes, because of all the causes of disease, the most frequent are those which depend upon food and drink, and because most of the causes which act upon the skin, act sympathetically, by preference, upon the digestive mucous membrane, gastro-enteritis is most generally the proximate cause of inflammatory fever in adults. The case is not altogether the same with infants, and it is still less so with women. Among the first, the head is not less frequently affected than the stomach, perhaps it is even more frequently the seat of irritation. Among women, and particularly among young girls, the uterus is the organ most frequently af-

fected. During adolescence, the chest is the part most liable to be affected. In young persons, who are devoted to the study of the sciences, which require exercise of the brain, and who are not exposed to the putrid miasms of anatomical rooms, the encephalon is the part from which the irritation is radiated. Among subjects who have an energetic heart and a well developed arterial system, the centre of the circulation is the principal point of irritation. In winter and in cold countries the mucous respiratory membrane is most frequently affected, and the digestive apparatus during summer, and in countries which are dry and hot, hot and damp, or cold and damp.

The inflammatory fever is endemic in dry and elevated countries, and on the mountains exposed to cold winds. It is rarely epidemic, that is to say, the epidemic irritations seldom preserve that degree of mildness and obscurity, which prevents the discovery of the seat of the affection, and which occasions the attention to be given only to the sympathetic symptoms, common to all the inflammatory fevers. When, however, these fevers are epidemic, they are most frequently occasioned by gastro-enteritis, bronchitis, or pneumonia, and are frequently observed to assume the adynamic character.

The investigation of the seat of inflammatory fever is with propriety insisted upon, because it is the most important point of theoretical and practical medicine. I consider myself justified in laying it down as a principle, that this fever, such as authors have described it, is nothing but the first scene, if I may so express it, of all the primitive or sympathetic irritations, attended with symptoms of irritation of the heart.

What shall we say of that species of uncertain, general disease spoken of by authors, which, after having menaced a diversity of points, at last fixes itself upon a single one? It is evident that they have confounded a plethoric condition and sur-activity of the circulation, which predisposes to inflammation, with a positively morbid condition, generally determined by a local cause of irritation, the action of which is favoured by the general condition of the economy. Besides, this predisposition is not so common as they pretend: most frequently it is the result of a local excitation, moderate, but yet sufficiently strong to give increased activity to the organic movement in a number of organs.

It is not my object to study what is called the termination of an inflammatory fever by a phlegmasia, or, in other words, the augmentation of the local irritation, which manifests itself finally by symptoms so intense, that they can no longer be mistaken. I shall only remark, that this conversion or termination is a powerful argument in favour of my opinion of the nature of inflammatory fever, and against the opinion of M. Broussais, and still more that of Pinel. The belief that the phlegmasiæ might complicate inflammatory fever, or that the latter might be converted into a local inflammation, is derived from the fact, that in the synocha, occasioned by gastro-enteritis, or by any other irritation, obscured by the extreme intensity of the sympathetic phenomena, we sometimes observe the supervention of well characterized pneumonia, encephalitis, metritis, or arthritis; that is to say, that to the inflammation which is called fever, because its nature and seat are unknown, there is joined an inflammation which is called *inflammation*, because its seat and nature are known.

Among the diverse terminations of inflammatory fever, (and the sense I attach to this expression is now known,) there are several which I shall consider in the following chapters; it is of these that the gastric fever, the adynamic, the ataxic, &c. have been made.

Treatment of the Inflammatory Fever.

From all that precedes, the following conclusions result:

1st. The inflammatory fever is only a primitive or sympathetic irritation of one of the points of the digestive or respiratory mucous membrane; of the hair, the uterus, the skin, of a joint, of some point of the muscular system, of one or more parts of the body, influencing the heart, or, finally, of the heart itself.

2dly. As this irritation often manifests itself by local symptoms little marked, he must study with great attention its causes, the idiosyncrasy of the subject, and the symptoms, to discover it in the midst of the sympathetic phenomena which it occasions.

3dly. Many organs may be sufficiently irritated to attract almost equally the attention of the physician.

4thly. It is important to recognise the seat, more or less extended, of the irritation which constitutes the inflammatory fever

with the view of opposing its development, and preventing what is called the termination of this fever by an inflammation, by another fever, or its complications.

5thly. In the treatment of this disease, regard must be had to the previous as well as the present condition of the patient, and the treatment, consequently, must be based on these two series of considerations; that is to say, that, to dissipate the local irritation which constitutes the inflammatory fever, it is necessary to direct our remedial measures especially against it, after we have combatted the predisposition which has preceded it.

Whatever be the seat of this irritation, the treatment consists in repose, abstinence, blood-letting, emollients internally and externally employed, and derivations of the least irritating character. If the inflammatory fever were a general irritation of the vessels, my task would terminate here; at farthest, it would only be necessary to enter into some details, in relation to the greater or less activity of the treatment, according to the intensity of the symptoms and the strength and age of the patient. But since the seat of the irritation varies, since each irritated organ affects the organism in a peculiar manner; since it is of importance to ascertain the existence of encephalitis, angina, pneumonia or gastritis, and since inflammatory fever may be occasioned by any of these, it becomes my duty to enter into details which formerly would have been superfluous.

In the disease under consideration, there have existed primitively an excessive alimentation and great activity of the stomach, the lungs, and the heart, or these conditions may not have existed. In the first case, whatever be the seat of irritation, a rigid diet and blood-letting are indicated. In the second, the diet may be less severe; and blood-letting may even be dispensed with in some cases in which the disease is of slight intensity. Blood-letting may likewise be dispensed with when the gastric mucous membrane is the seat of the principal irritation provided the cardiac irritation be not very intense.

When blood-letting is indicated, it is not a matter of indifference whether it be taken from the neck, the arm or the foot; the seat of the irritation, if it be very intense, must decide this point. We must bleed from the arm when the lungs, the pleura the peritoneum, the liver and the uterus are menaced; when the

encephalon is the seat of irritation, blood must be taken from the jugular vein or the temporal artery, more frequently from the foot. We must bleed copiously, and not fear to repeat the operation, if the hardness of the pulse continue, if it be vibrating, and particularly if it become small without ceasing to be hard, for in that case, there is ground to fear that the heart may be severely affected.

After venesection, or where it is not thought necessary to practise it, if the irritation be intense or prolonged, the application of leeches, as near as possible to the seat of the disease, is indicated. We should say that it is always indicated, if experience did not prove that we may often omit it with impunity, and that we may do so in every synocha of slight intensity; for example, rest and diet are sufficient in that which arises from irritation of the mammæ, when these organs are about to secrete milk. However, there are more inconveniences to be apprehended than advantages to be expected from the omission of bloodletting; and experience daily proves, that from the neglect of this curative measure, the inflammatory fever *degenerates* into inflammation, into gastric, adynamic, or ataxic fever. The methodical employment of leeches is never injurious; they may even be used to an improper extent, without any serious inconvenience, in inflammmatory fever. The abstraction of blood is very generally recommended in synocha; but venesection has been recommended in preference to leeching. Venesection is not so generally dreaded in this fever as in the others. Pinel himself recommends it.

There are no fixed rules to determine the number of times venesection and leeches are to be resorted to, or the quantity of blood to be abstracted each time, as this is entirely regulated by the idiosyncrasy of the patient, the intensity of the irritation and the nature of the affected organ.

In general, one copious bleeding is sufficient; it is seldom the case that more than two are necessary, except in the case of men who have large lungs, an energetic heart, strongly developed muscles, an abundant and very stimulating blood; in the case of suppressed periodical hemorrhage, and in females who are suffering from suppression of the menses, or who have attained the period of their cessation, or who present the signs of plethora,

often observed after the cessation of the menses.   All these circumstances may render it proper to bleed more than twice.—

The quantity abstracted each time should not be less than twelve ounces; we may go as far as sixteen or twenty ounces, in the case of the individuals I have just mentioned, without exceeding this quantity; it is better to repeat the operation.   In general it is preferable to produce a sudden depletion by an abundant abstraction of blood, and, subsequently, to take each time a smaller quantity of blood, unless, which is so frequently the case, there occur suddenly an increased violence of the disease, tending to become permanent, and threatening the life of the patient—in this case, we must not hesitate to have recourse to a bleeding equally copious with the first.

We should especially repeat blood-letting, if the lungs are affected or only threatened: a fact which may be discovered by the embarrassed respiration, and the oppression, which is soon accompanied with pain. When carditis is suspected, the abstraction of blood should neither be too copious, nor too frequently repeated.—The irritation of the lungs, as well as that of the peritoneum, may require more than one bleeding, sometimes it is sufficient to resort immediately to the application of a large number of leeches, and, as has been remarked, they should be preferred to venesection, whenever the stomach is irritated.   This organ and the small intestines being frequently affected, either primitively, or, at the same time, with the encephalon, the heart, the uterus or the lungs, the application of leeches to the abdomen, and especially to the epigastric region, is one of the means to which we should most frequently resort in inflammatory fevers; and it is one of the measures that contribute most powerfully to prevent the degeneration of this fever into *a fever of a bad character*.

But the application of leeches to the abdomen is not always sufficient to prevent the development of what is called cerebral fever.   To obtain this result, we must, even when the state of the digestive organ is such as to require the application of leeches to the abdomen, apply them to the temples, behind the ear, or to the legs, with the view of preventing or combatting the progress of the encephalic irritation; sometimes we must even resort to venesection, and practise it at the foot.—

The leeches should be applied to the sub-maxillary region, if there be angina; to the sternum or above this bone, or upon the trachea, when there is bronchitis, trachitis, or laryngitis; to the side of the chest, if there be pleurisy; to the præcordial region, if the pericardium or heart are powerfully affected; to the right hypochondrium, in the case of hepatitis; to the anus, when the large intestines are irritated; to the perineum, to the hypogastrium or the lumbar region, if the bladder or the kidneys are particularly irritated; to the vulva, the thighs or legs, when the irritation is seated in the uterus, and to the joints, when they are the seat of intense pain.

In adults, less than eight or ten leeches should not be applied, and, this number being rarely sufficient, it is necessary to renew their application. It is often useful to commence with a greater number, fifteen, twenty, or even thirty, particularly if venesection has not been resorted to previously.—The flow of blood should never be suddenly arrested on the removal of the leeches. Their bites determine an afflux of blood, which may be injurious, in proportion to its vicinity to the irritated part. The blood, therefore, should be permitted to flow freely for one or two hours at least, after the removal of the leeches, and sometimes a much longer time, provided syncope does not occur, which is generally a favourable omen. The effect of this prolonged flow of blood is, that the afflux diminishes by degrees, that the irritated point loses a certain quantity of blood, and that the mass of this liquid is slowly diminished; we are thus enabled to abstract a greater quantity of blood without danger, by means of leeches, than by venesection, which produces a sudden depletion.

The application of forty, fifty, sixty, eighty leeches, or even more, are rarely indicated, except in cases of peritonitis and pleurisy, where, at the commencement, venesection has not been practised, as should always be done, when the prompt abstraction of a large quantity of blood is necessary; an indication which is fulfilled but imperfectly, even by the application of a great number of leeches.

Were not this work particularly designed for the student, these details should not be insisted upon, but they are thought too important to pass over them in silence. The same motive

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induces me to combat some prejudices, still very generally en-
tertained, with regard to the effects of the application of leeches.
This mode of abstracting blood weakens, it is said, and injures
the organ of sight: leeches draw the blood towards the inflamed
part and fix it there, when they are applied very near the seat
of disease: in weakening the vital action of a part they may de-
termine gangrene: they do not deplete so directly as phleboto-
my, and have no advantage over it; their action differing in
nothing from it, unless it be in this, that they have the inconve-
nience of producing their effect more slowly: they occasion he-
morrhoids when applied to the anus: they often occasion as
many little phlegmons as there are bites, giving rise to an abun-
dant secretion of pus over an extended portion of skin: finally, it
is often very difficult, sometimes impossible, to arrest the flow of
blood from the bites, and this hemorrhagy may occasion death.

If all these remarks were well founded, it would certainly be-
hoove us to renounce the employment of a means that would
multiply so greatly the chances of failure.   But this is far from
being the case: depletion by leeches is, undoubtedly, of all active
therapeutic means, the least capable of producing injurious ef-
fects, even when abused.   I do not think it necessary to answer
those reproaches, which this method shares in common with the
lancet.   The question is simply this, must we have recourse to
the abstraction of blood when it is indicated; the remarks which
have been made upon the subject suffice to point out the cases in
which leeches should be preferred to the lancet.

The apprehension of weakening the sight is a popular error
which I would pass by unnoticed, were it not entertained by
some respectable practitioners.   This prejudice has originated in
the fact, that the sight has sometimes been observed to become
weak, and even extinct, in a short time after the application of
leeches around the orbits, to the anus, or to the legs, in cases of
painful irritation of the eyes, and of obstinate and repeated in-
ternal ophthalmia, which so often precedes alteration of struc-
ture in the most important parts of this organ; thus the aggrava-
tion or appearance of a disease, which could not be cured or
prevented, has been imputed to the employment of leeches.

The afflux of blood to the irritated part, and the pain some-
times increase after the application of leeches; this takes place

when in an intense inflammation, situated not far from the skin, a small number of leeches is applied, and especially when the blood is not permitted to flow after their application. This inconvenience is easily avoided, since it is sufficient not to be too reserved in the number of leeches employed, and to encourage the flow of blood after their removal.

It has not yet been proved that the transition from inflammation to gangrene may be the effect of the application of leeches: this is one of those groundless apprehensions, to which an expiring theory has given birth, and which experience contradicts. It is certainly improper in any case to abstract too much blood, but the opposite error is still more dangerous in its tendency.

The slowness with which this mode of blood-letting acts, is one of its most precious advantages, where the use of the lancet might occasion a dangerous debility of the circulatory system, or favour a fatal local congestion.

The little phlegmons, occasioned by the bites, rarely occur when the leeches are well chosen; besides, these inflammatory tumours are an excellent derivative of the irritation which is to be combatted. Inflammation of the subcutaneous cellular tissue and the collection of pus which results from it, are a very rare effect of the application of leeches; they occur only on the abdomen, and always yield to proper treatment. This inflammation, which has appeared to me to contribute to the cure by the powerful revulsion it occasions, only manifests itself at the instant of the commencement of convalescence.

It is absurd to dread the hemorrhage which may succeed the application of leeches, when it may be so easily remedied, by means of styptics, by cauterization, with the concentrated acids, the nitrate of silver cut to a sharp point, or a probe of copper brought to a white heat. When this accident is apprehended, and the physician does not reside in the vicinity of the patient, in the country, for example, a small quantity of sulphuric acid may be intrusted to some intelligent person among the friends of the patient, who is to be instructed in the manner of using it, in case syncope supervene before the flow of blood ceases.

Scarified cups are to a certain extent a substitute for leeches, when these animals cannot be procured; but in this case it is ne-

cessary to use the cup with pump and lancets described by MM. Sarlandiere* and Domours, or practise deep scarifications, and reapply the cup several times upon the same place, to abstract the necessary quantity of blood, to provoke a more considerable afflux, and an ecchymosis analogous to that occasioned by leeches.

When, in inflammatory fever, the idiosyncrasy of the subject, the nature of the cause, and especially the symptoms, announce that the febrile movement is occasioned by gastro-enteritis, abstinence, which is indicated in every acute irritation, must be most rigidly enforced, even in the treatment of children and old persons. In every other case, it may be less severe: the broth of veal, chicken, or of frogs may even be allowed, care being taken to prohibit its use when the redness of the edges of the tongue announce the extension of the primitive irritation to the stomach. We must likewise enforce an absolute diet when there exists from the commencement of the disease a complication of gastro-enteritis with encephalitis. Experience alone can show how far it may be proper to depart from the severity of these principles under certain circumstances: it must not be forgotten, that if the irritation often terminates happily, it likewise frequently happens that it increases, extends, and becomes complicated. The physician will then regret his compliance with the importunity of the patient and his attendants, or perhaps he will have to accuse the prejudices of his first medical education. I do not hesitate to confess, that I am here pointing out a rock upon which I have already so frequently split, that I consider it due to the interests of truth to make the avowal.

It is only since the signs of gastric irritation have been pointed out by M. Broussais, that it is possible to understand the importance attributed by Hippocrates to diet, according to the results of his experience. The admirers of the father of medicine, who very frequently pay little respect to his decisions, would do well to follow the precepts which he has given with regard to regimen, in the acute diseases, instead of setting them aside through the vain pretence that the moderns live less frugally than the ancients.

* Bdellometre, Paris, 1819. in 8vo.

When the patient experiences no thirst, if the tongue be in its ordinary state, or if it be whitish, it will be sufficient to prescribe for his drink, water, either pure, or charged with a small quantity of mucilage, of gum Arabic, or of fecula, moderately sweetened with sugar or honey, taken in small quantities at a time, and repeated according to circumstances. If thirst be complained of, we recommend water acidulated with the juice of lemons, gooseberries, cherries, or with vinegar, or the drink may be orangeade, orgeat or clarified whey. All these drinks, taken at the temperament of the apartment, contribute to calm or prevent the irritation of the digestive organs; they replace without inconvenience the aliments which might excite, or aggravate this irritation, and they remedy constipation. This last symptom indicates the use of drinks, such as veal water, the decoction of prunes or tamarinds, of lavements of pure water, or of mucilaginous lavements, or of those which are rendered laxative by the addition of honey, vinegar or some neutral salt.

It is always useful to evacuate the fecal matters, which may have accumulated in the intestines. A remarkable melioration of the symptoms is always observed after this evacuation, which, however, we should be careful not to provoke by means of purgative potions or ptisans, which might occasion high irritation of the stomach and intestines.

It is sometimes beneficial to solicit, gently, the secretion of urine by means of water, to which is added a small quantity of the nitrate of potash. But this drink does not produce the desired effect, and may add to the sympathetic phenomena of irritation, when it has its seat in the gastro-intestinal mucous membrane. The use of it is, on the other hand, eminently indicated, when the irritation is seated in the skin or in the liver. This salt should be administered in emulsions, with which however, camphor should not be incorporated, as it sometimes is, without good assignable reason. Potions with the oil of sweet almonds, at best useless, are positively injurious when there exists the slightest irritation of the stomach.

Practitioners accustomed to permit maladies to pass undisturbed through their periods, may deride the strictness of these precepts. Let us not, however, overlook the fact, that, in arresting the progress of what is denominated inflammatory fever,

we very often prevent the development of maladies, always formidable, and very frequently fatal. Besides, principles cannot be laid down too rigorously:—the careful application of them is unfortunately very rare.

The employment of tonics in synocha, has hitherto been very injudiciously treated of, the precepts on this head have been confined to the vague recommendation of baths, semicupia, emollient fomentations, and refrigerant applications. Rubefacients and other derivatives have scarcely been mentioned.

When the invasion of the disease has been preceded by signs of general plethora, we must not too promptly have recourse to tonics, of whatever kind they may be, as these applications may in certain cases be dangerous. The plethora must first be remedied by blood-letting. If the local irritation continue very intense, leeches should afterwards be applied to the part indicated by the seat of the disease, previously to the employment of derivatives. If the irritation be seated in the head, pediluvia of hot water, rendered slightly irritating by the addition of salt, vinegar, or ashes, should be prescribed in the morning, and especially on the approach of night, with the view of preventing the exacerbations. Should the irritation persist, the feet should be plunged in very hot water, and kept in it for some minutes; leeches should then be applied above the ankles, and the feet again placed in water, not so hot as the first, and be permitted to remain in it from 10 to 30 minutes. The feet should then be taken out and enveloped in hot cloths, and the blood permitted to flow as long as it may be necessary. There are few cases in which this energetic mode of proceeding does not promptly cause the cessation of this afflux of blood towards the head. The application of ice-cold water, or of a cloth wet with cold vinegar to the forehead, powerfully seconds these remedial measures. Irritation of the pharynx is advantageously treated by irritating pediluvia after blood-letting. Cataplasms, moderately hot, applied around the neck, are often useful.

When the irritation is seated in the trachea or the chest, pediluvia are not indicated; it is sufficient to take blood from the parietes of the thorax or from the neck, to defend the patient from cold, to apply cataplasms to the neck or the sternum, and to prescribe mucilaginous drinks, or even sugar and water alone,

taken very hot, which is the very best of sudorifics and expectorants.

I cannot here enter into the details of the treatment appropriate to laryngitis, simple or complicated, known under the name of *croup*,* or of many other inflammations of the neck and head; but I must repeat that the best manner of preventing or curing them is to resort to the antiphlogistic treatment, immediately on the appearance of the first phenomena of inflammatory fever. Pediluvia are not suitable in synocha produced by the irritation of one of the viscera of the abdomen unless it be the uterus. But the same rules apply in the latter case to that of the encephalon; to derive advantage from the pediluvia, the general and local plethora must first be combatted.

In every irritation that occasions a remarkable acceleration of the action of the heart, energetic rubefacients, and still more vesicatory applications should be rejected. The mildest sinapisms, by inflaming the skin, add to the irritation of the heart. Vesicatories increase that of the kidneys and the bladder. All these means are peculiarly dangerous when the redness and swelling of the skin announce that this tissue is more irritated than any of those which participate in the morbid condition. Even pediluvia are then contra-indicated; the internal use of emollients and refrigerants must be insisted upon, and the patient equally preserved from a sudden chilling of the skin and from too elevated a temperature.

It is almost unnecessary to remark that emetics, purgatives, still more emeto-cathartics and stimulants, as well as tonics, are totally inadmissible in the treatment of inflammatory fever, whatever may be the seat of the irritation constituting it, and that they are particularly dangerous in gastro-enteritis. Emetics, purgatives, and blisters, may be prescribed in the treatment of some inflammations, but they are improper in those which are announced by the symptoms of synocha.

Beyond the Alps and in England, emetics and cathartics are ranked with the anti-phlogistic remedies, and recommended in

* See my articles *Bronchitis* and *Croup*, and all those which relate to internal phlegmasiæ, in the *Dictionnaire Abregè des Sciences Medicales*, and my *Nosographie Organique*. Dèsruelles, Traité du Croup, Paris, 1824, in 8vo.

treatment of inflammatory fevers, because the evacuations which they produce occasion a prostration of muscular energy. These means certainly do debilitate, for they abstract materials from the economy, but at the same time they irritate the intestinal mucous membrane. Now, the irritation of this membrane often increases the intensity of the symptoms, much more than the abstraction of nutritive materials diminishes it. When the inflammatory fever results from gastro-enteritis, what must be the result of a practice so irrational? We must believe that this treatment, in some cases, occasions the cessation of the sympathetic phenomena, since it is affirmed by distinguished practitioners, but without doubt, the most frequent result is the inflammation of the gastric or intestinal mucous membrane, which, although not announced at first by signs easy to be recognised, yet sooner or later produces the most deplorable consequences. As every nation pays some tribute to error, we at least may felicitate ourselves that we have not to accuse ourselves upon this point: there are few errors so fraught with danger.

The treatment of epidemic inflammatory fever, is the same as that of sporadic cases; for the nature and seat of the disease is the same in both, except, that when we have treated a number of cases, we have an opportunity of determining from the commencement of the disease, what will be its principal seat, but we must not forget that this particularity depends more frequently upon idiosyncrasy than upon the morbific cause. We should especially endeavour to prevent the degeneration of the inflammatory fever, that is to say, we should prevent the local irritation which constitutes it, from becoming exasperated and extending to several important organs. It is then that we must not permit ourselves to be intimidated by the fear of the supervention of astheny, or as they say, of a fatal adynamy.

Venesection, or the application of leeches, often relieves the profound prostration into which the patient has fallen, in consequence of the excessive irritation of the heart, which becomes painful and beats with difficulty. By diminishing the blood, and consequently moderating its stimulant action, the heart is acted upon precisely in the same manner as the stomach is influenced by diet.

The treatment of M. Navieres in the epidemic of St. Martin

des Champs, was as rational as it could be at that epoch; indeed, few practitioners would have evinced so much sagacity; for at that time, the debilitating effects of blood-letting were much dreaded. At the present day, by a more severe system of diet and by the employment of leeches, in addition to general blood-letting, we succeed in abridging greatly the duration of diseases of this kind.

This violent irritation of the heart, more common in epidemic inflammatory fever, than in sporadic synocha, never occurs but when the patients are abandoned to nature. Are there then cases in which it is proper to abandon them in this manner? Since we have pointed out what theory suggests and experience demonstrates, with regard to the treatment of synocha, the solution of this problem becomes more easy. And, in the first place, what is meant by abandoning the disease to nature? Is it meant that the patient should continue to follow his occupations, that he should walk, work, eat and drink, and, in a word, act as in a state of health? Certainly, no one entertains such an idea of the method of expectation. The warmest partisans of this method recommend repose, diet, the use of mucilaginous or acidulated drinks. It is then evident that all that is meant by this method is the exclusion of the abstraction of blood, except in some very rare cases. It is certain that many inflammatory fevers are cured, as I have already said, without the employment of any species of blood-letting; but the works of experienced observers are filled with examples of inflammations developed as a result of inflammatory fever: all authors agree that this fever very often precedes the appearance of other fevers, particularly in epidemics. Now, admitting the supposition, which is contrary to every kind of probability, that the disease which succeeds the inflammatory fever, or which, to use their language, supervenes and complicates it, has no connexion with it, a supposition which nothing justifies, which on the contrary every thing contradicts, still it cannot but be admitted, that in arresting inflammatory fevers at their commencement, by sanguineous emissions, the development of the secondary inflammation or fever, will, in the greatest number of cases, if not in all, be presented. This proposition is evident with regard to the transition of synocha into manifest inflammation; the succeeding

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part of this work will, I hope, prove that it is not less true with regard to the fevers which succeed inflammatory fever, or which complicate it. Convalescence is always rapid after inflammatory fevers, whatever be the organ principally irritated. When the pulse has resumed its normal condition, when the head is free and the skin without morbid heat, the subject may immediately return to his usual regimen, by gradually increased quantities.

We would only recommend moderation in eating, even after the entire restoration of health, with the view of avoiding the renewal of the general plethora, which may have preceded the fever. He must avoid as much as possible a new exposure to the causes which have determined the invasion of the disease. He should particularly avoid returning too promptly to the use of wine, coffee and all drinks and aliments that actively excite the heart; moderate exercise in the open air, the use of light unstimulating food, such as fruits and pot-herbs, not capable of occasioning flatulence, continence, and repose of the brain, will complete the cure.

If after the disappearance of the symptoms which indicate the acceleration of the circulatory movements there remain pain of the head, a slight cough, an obstruction of the chest, some oppression, palpitation, redness of the tongue, and a sense of weight at the epigastrium, or pain in the lumbar region, at the hypogastric or umbilical region, it is necessary, notwithstanding the return of the pulse to its primitive condition, not to permit the convalescent to satisfy his appetite before the disappearance of all traces of the morbid condition. A continuance of the means employed in the course of the disease, against the principal irritation, will hasten the progress of convalescence: these means, however, should be used less actively.

It is easy to deduce, from what precedes, the rules to be observed with a view to the preservation from inflammatory fevers; and the avoidance of relapses, which, however, are not very common.

With regard to the precept of giving tonics in convalescence from inflammatory fevers, it is sufficient to indicate the practice, to demonstrate its absurdity.

I might here speak of the treatment of inflammatory fever,

complicated with an inflammation or another fever; but in treating of each of the fevers, which shall form the subject of the following chapters, I shall discuss their relations with the inflammatory fever. I think enough has been said to show, that when an inflammation appears to supervene upon an inflammatory fever, there is an augmentation of the intensity of the disease, and not change of nature, or a complication, unless indeed the irritation, confined at first to a single organ, extend to one or more different organs, with such an intensity that it develops in the latter, a manifest inflammation. In both cases, the energetic employment of the antiphlogistic method, upon the different points of the organism, which are inflamed, suffices to arrest the progress, extension, and repetition of the phlegmasia.

We must not, under the vain pretext of avoiding protracted convalescence, hesitate to practise all the necessary vascular depletion; for before making the inquiry what will be the nature of the convalescence, we must do every thing that is necessary to bring the patient to this happy state. Protracted convalescence and prolonged debility are more frequently owing to the persistence of an irritation feebly combatted by a timid practitioner, than to diet and the loss of blood.

CHAPTER III.

Of Gastric Fever.

WHEN we compare the opinions of the ancients and of the moderns, with regard to a disease, we at once perceive that if the latter have employed words that correspond at least in appearance with those of the ancients, yet their ideas differ more than the words of their respective languages. Hippocrates has not designated bilious fevers by name, he has merely described acute diseases with heat and evacuation of bilious matters. Galen was the first who divided continued fevers into sanguine and bilious. I do not imagine I shall be reproached with not having regarded his distinction of the fever of one week, and that of fifteen days or three weeks; but I should remark that the physician of Pergamos considered the *bilious* fever only as a variety of the *ardent* fever. He had then seen, notwithstanding his humoral theory, the analogy of bilious to inflammatory fever. This analogy could not but be observed, and it would not escape the observation of certain physicians of the present day, had Galen confined himself to a description of the symptoms, as Hippocrates did, instead of seeking notions with regard to the nature of the disease, in the alvine evacuations of the patient.

Baillou was the first to give the name of gastric fever to the disease which Hoffman had named choleric fever, Baglivi the *mesenteric* fever, Pinel the meningo-gastric, and Recamier the *bilious* pepsic fever: Baillou, disregarding the *bilious* symptoms, has not separated the gastric from the inflammatory fever, but confounded them under the name of *synocha*. If this union possess some advantages, it is not exempt from inconvenience. For an accurate description of what might be denominated *pure bilious fever*, we must read the works of Stoll and Tissot. Finke has described, under the name of *anomalous bilious fever*, di-

verse morbid states which he attributed to the proximate cause of bilious fever. I. P. Frank has followed the footsteps of his predecessors. Pinel has only reproduced, in other terms, the humoral theories of the Galenists; giving the name of *gastric embarrassment* to the state denominated by them *turgescence of the bile*, or *bilious saburra*.

Let us here take a summary view of the descriptions given by all these authors.

Bilious or gastric fevers are announced by the loss of taste and appetite, a repugnance to food, particularly to meats and rich soups; by the bitter taste and clamminess of the mouth, a white or yellow covering of the tongue, fetor of the breath, general lassitude, a painful sense of weight in the heart, the back, the loins, and the extremities, pallid complexion, the greenish yellow colour of the conjunctiva and of the part around the lips and the alæ nasi. This state may continue from one day to a month or more. In this space of time other symptoms generally supervene. Thus, we observe,

1st. A sense of weight, of pulsation, and even of pain at the epigastrium; frequent and nidorous eructations, nausea and vomiting of bilious matters, (*gastric embarrassment.*)

2dly. Colics, borborygmi, tension, and swelling of the abdomen, constipation, or a diarrhœa of matters of a greenish yellow colour, pains in the inferior extremities, particularly in the knees, (*internal embarrassment.*)

3dly. These two series of symptoms frequently manifest themselves at the same time, (*gastro-intestinal embarrassment.*)

4thly. Often, after these phenomena have continued some days, one or more weeks, or even a month, a rigor occurs, the pulse is small and concentrated, the skin is dry and becomes the seat of a burning pungent heat; the pulse becomes frequent, full, and hard; the thirst, anorexia, disgust for food, and bitterness of the mouth augment; the patient desires cold and acidulated drinks; he experiences pain in the frontal region, a sense of lassitude and contusive pains in the back and in the limbs, which can no longer sustain him. Entirely occupied by these sensations, he sometimes scarcely perceives the pain he at first felt at the epigastrium; but when the slightest pressure is made upon

this part, he shows by his complaints, that the pain has not ceased. The tongue becomes dry and manifestly red at its edges, and at its point; it is more thickly coated; a yellowish tint, more or less deep, is spread over the whole surface of the body. The patient, more irascible than usual, does not sleep, or his sleep is interrupted, and is not refreshing, (*bilious fever.*)

Upon the morning succeeding the day upon which the rigor occurs, it reappears. It generally commences about the back, and is accompanied with trembling, the pulse becomes small and concentrated; the dryness, the pungent heat of the skin, and the thirst increase, the face becomes red and animated; the pulse resumes its force and hardness, and after the lapse of half an hour, or one or more hours, the surface becomes moist without losing the character of pungency, which distinguishes it, and the patient finds himself nearly in the same state in which he was before the paroxysm, which, with more or less intensity, is repeated under the quotidian, tertian, quartan, or double tertian type, and, sometimes, under an irregular type. There are sometimes only simple *paroxysms,* that is to say, exacerbations of the symptoms, without a return of the rigor and smallness of the pulse; it is then a *continued* fever: when the paroxysms are better characterized, it is *remittent.* In the first case, it generally continues from seven to twenty-one days and upwards, if the treatment, generally recommended by authors, be resorted to; in the second, the duration is from fourteen to forty days.

When this fever terminates favourably, the change is announced by a general diaphoresis, warm and mild to the touch; dry urine depositing a rose-coloured or lateritious sediment, a diarrhœa, or vomiting of mucosities or bile. More frequently the symptoms amend gradually, without the occurrence of the evacuations, which have just been mentioned; but, in all cases, the skin becomes moist and pleasant to the touch; the urine flows more freely than before, and deposites a sediment more or less analogous to that which has just been mentioned.

It is far from being the case that we always obtain the cure of bilious fever; frequently, (not *occasionally,* as Pinel says,) it passes, between the third and the seventh day, to the state of adynamic, ataxic, yellow fever, &c.; or it becomes complicated with a manifest inflammation of the lungs, and frequently termi-

nates fatally, if the usual treatment be employed.   At other times, it assumes the intermittent type.   Pinel has said of the bilious, as well as of the inflammatory fever, that it never terminates fatally, except in cases of complication, and that the prognosis is never unfavourable.   His predecessors did not express themselves thus, because none, equally with him, separated fevers from their precursory symptoms and their sequelæ: it is, however, certain that death does not occur, while none but the symptoms assigned to gastric fever, by this professor, are observed.

This fever is not always preceded by gastric or intestinal embarrassment; frequently it is preceded by no precursory sign. Sometimes it supervenes in the course of an inflammatory fever, in consequence of gastric irritation: in this case, there is only an increased intensity of the gastric symptoms, and of those of the irritation of the heart; constituting the *causus* of the ancients, and the *bilious* or *gastric inflammatory* fever of the moderns. This fever may, like simple bilious fever, degenerate into an adynamic or ataxic fever, or become complicated with a decided inflammation; it very seldom passes into the intermittent type.

5thly. After the symptoms of gastro-intestinal embarrassment have continued some days, the gastric sensibility sometimes becomes an acute pain, lacerating and insupportable; the patient vomits, and at the same time passes by the anus, the *debris* of food, imperfectly digested, and bilious matter, of a greenish, grayish, or blackish colour, or resembling the lees of wine; he is affected with hickup, tenesmus, and a burning thirst; he suffers from a sense of burning heat in the abdomen, while his hands, and more especially his feet, remain cold; the surface generally is dry, while his head and chest are covered with a cold and clammy sweat; the epigastric region is tense, hot, and painful, as well as all the anterior parts of the abdominal parietes; the face is shrivelled, the features are greatly altered, and express suffering, the calves of the legs are affected with painful cramps, the patient throws himself across his bed upon his abdomen, or remains motionless in the most complete prostration: frequently he is affected with delirium, and his limbs are agitated by convulsive movements, (*cholera.*)

The cholera is not always preceded by symptoms of gastro

intestinal embarrassment; it is sometimes announced suddenly by a violent rigor, coldness of skin, and smallness of the pulse, which continue during the development of the symptoms of the disease.   After one or more hours, or in six or seven days at farthest, the symptoms cease rather suddenly, or they assume increased intensity; the vomiting becomes more and more frequent, as well as the hickup and syncope; delirium supervenes, or augments; the convulsive movements are redoubled; if the patient retain a consciousness of his existence, he complains of burning thirst, and intense pains, and, finally, falls into a stupor and expires.

On opening the body, the mucous membrane of the colon, duodenum, and stomach, is found thickened, vividly red in some points, of a brownish red and sphacelated in other points; the alimentary canal is often wonderfully contracted; these circumstances, according to the remark of M. Geoffroi, banish all doubt with regard to the inflammatory nature of cholera.

M. Keraudren has published an account of the cholera morbus of India, in which he informs us, that post mortem examination displayed unequivocal traces of inflammation, when the fatal termination did not occur too suddenly. M. Gravier has published observations establishing the same fact.

The causes of these different affections are; adult age, old age, the bilious temperament, debility, an excessive sensibility; a residence in hot and damp climates, and in paludal districts, living in hospitals, prisons, ships, and camps; summer, particularly the termination of this season, and the commencement of autumn, excessive alimentation, the use of certain indigestible or irritating articles of food, such as black meats, fat, oil, beans, onions, pine-apples, poisonous mushrooms, the cold drinks taken during perspiration, alcoholic drinks, the sweet wines, very irritating medicines, emetics and cathartics of a very violent kind, or injudiciously administered, acids, the antimonial and arsenical preparations, the presence of worms in the intestines or stomach; a sedentary life, or immoderate exercise, a transport of rage, the depressing moral affections, assiduous application to study, insolation, the suppression of the cutaneous transpiration, of the gout, the itch, the herpetic affections; finally, dentition.

Let me not be accused of having given at pleasure an inco-
herent picture; I quote almost verbatim.*

From the time of Galen, until the end of the last age, the
production of the diseases of which I have just enumerated the
symptoms and the remote causes, predisposing and occasional,
have been attributed to the superabundance or the acrid quality
of the bile, at first in the liver, and afterwards passing into the
stomach and intestines.   Cullen himself was not altogether free
from this error, which was entertained, if not in its totality, at
least to a great extent, by Tissot, Finke, Selle and Stoll.   J. P.
Frank vacillated between an obsolete theory and the truth, when
Pinel declared against Brown, who attributed the bilious fever
to debility, and against the other authors whom I have just men-
tioned.   In accordance with Fordyce, his language is as follows,
viz: " Every thing seems to demonstrate that the principal
seat of these fevers is in the alimentary canal, especially the sto-
mach and duodenum, no less than in the organs secreting the
bile and pancreatic juice."   But he sees in the disease only an
augmentation of febrile irritability, and he admits a kind of oc-
cult cause, which, he says, is at present, and doubtlessly will be
long unknown.   M. Tomasini endeavours to prove that bilious
fevers, and other analogous affections, are only phlegmasiæ of
the liver, which extend more or less to the stomach and intes-
tines.   This was a happy correction of the opinion of Galen,
who, as I have just remarked, recognised the irritation of the
primæ viæ.   M. Broussais has gone farther, and has proved
that the stomach is, in reality, the principal seat of bilious fevers.

When we study with care the causes of these fevers, we per-
ceive, that if some act primarily upon the brain, as wounds of
the head, violent anger, depressing moral affections, prolonged
study, watching; others act upon the skin, as insolation, the sud-
den cooling of this tissue, and the disappearance of the phleg-
masiæ, of which it is the seat; or upon the articulations, as
evinced by the sudden cessation of pain, affecting these parts,
in consequence of exposure to cold; yet, that they direct their
action, finally, towards the digestive canal, and especially the
stomach, which is the most irritable part of it.   For a more ob-

* Nosogr. Phil., 5th ed. tome 1, p. 74, et suiv.

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vious reason, these parts become irritated when their internal surface is placed in contact with food of too exciting a quality, stimulating drinks, irritating poisons, the agent designated by the name of miasms, exhalations, etc.

The direct or sympathetic effect of these different causes is more powerful, when the subject has arrived at the period of life at which we observe the existence of gastro-hepatic predominance, indicated by the desire of stimulating food and drink, energy of digestion, habitual constipation, and the yellow tint of the skin, which characterizes the inhabitants of hot countries, and particularly of hot and damp climates. This predominance of the stomach and liver, which Bordeu well recognised, increases in summer, and particularly towards the decline of this season, when the heat, without ceasing to be intense, becomes united with humidity. The influence of this predominance continues even during autumn, provided there be a continuance of heat, or the heats of summer have been excessive. To the usual signs of gastro-hepatic predominance are then joined prostration, fatigue, a sense of contusion in the limbs, and particularly in the articulations, precursory signs of the irritation which succeeds the active stimulation of the stomach. If the irritation be not very high, and be confined to the stomach, we observe the symptoms which have been collectively designated under the name of *gastric embarrassment.* If the irritation be confined to the intestines, we have *intestinal embarrassment.* When both these parts of the intestinal canal partake of the irritation, it constitutes *gastro-intestinal embarrassment;* if the irritation become aggravated, it gives rise to the phenomena of *bilious* or *gastric fever.* Finally, when the irritation supervenes suddenly, or becomes suddenly exasperated in the stomach, the duodenum or the colon, bile is abundantly evacuated upwards and downwards, and the abdomen is affected with violent pains: this constitutes *cholera.*

There is one variety of gastric embarrassment, with which it is important to be acquainted. The tongue, covered with a foul and thick coating, is not red at its edges; the mouth is bitter and clammy; the appetite is nearly the same, or it is merely diminished, there being no disgust for food; the excrements are a dirty gray or a deep gray, and not coloured with bile. This state

is sometimes coexistent with entire integrity of the stomach and intestines; the irritation exists only in the liver, or at most in the duodenum; the stomach is free from irritation. Yet, in old persons and in certain individuals, whom it is difficult to characterize, irritation of the stomach exists, although the edges of the tongue are not red, and there is neither thirst nor nausea; if, however, we press upon the epigastric region, we occasion pain.

When the irritation is sufficiently intense and extensive, to give rise to a reaction of the heart, and constitute gastric or bilious fever, three series of symptoms result, one of which pertains to the digestive apparatus and its connexions, one to the heart, and, finally, one to the encephalon. These different symptoms present themselves under four different shades, which I deem it necessary to point out with care, since they present special indications.

The first shade is characterized by pain at the epigastrium, increased by pressure, redness of the point and edges of the tongue, dryness of this organ, the middle of which is covered with a slight coating, of a very faint yellow colour, by impaired appetite, thirst, a desire for cool acid drinks, which, notwithstanding sometimes increase the pain of the stomach, even when administered in small quantities; by nausea and the vomiting of mucosities without bile; frequency of the pulse, which is strong without being hard, burning heat of the skin, which presents no particular colour, with the exception of a deep redness of the face, which sometimes exists, a sense of painful weight in the frontal sinuses; finally, by constipation and scantiness of the urine, which is of a citron colour, or entirely colourless. This shade is certainly the one which decided Pinel to reject the name of *bilious* fever, and to substitute that of *meningo-gastric* fever: it, in fact, presents none of the symptoms which are called bilious; the irritation is confined to the stomach and small intestine. There is in this fever a more intense degree of gastro-enteritis than in the inflammatory fever occasioned by gastro-irritation; but the irritation is less intense than in the adynamic fever, properly so called.

The second shade is characterized by the following symptoms; viz. pain in the epigastrium and right hypochondrium, a thick and yellow coating of the middle of the tongue, which is dry,

while the edges and point are red, bitterness of the mouth, often an invincible repugnance to food, particularly to meat or rich soups; thirst, and a strong desire for acid drinks, which are always taken with pleasure, and retained by the stomach, when they are given in small quantities; a vomiting of bilious matters of a yellowish or greenish colour; frequency and extreme hardness of pulse; a pungent and burning heat of the skin, which, as well as the conjunctiva, is tinged with yellow over a part or the whole of its extent, acute pain in the forehead, the temples, and the base of the cranium; constipation, scarcity of urine, which is thick and of a deep yellow colour. By these traits we recognise the *bilious synocha* of the humoralists, and the *bilious inflammatory fever* of the pyretologists: it is an intense irritation of the stomach, which extends to the liver; in fact, one of the varieties of gastro-hepatitis.

The third shade has certain symptoms superadded to those of the preceding. To the coating and redness of the edges of the tongue, which is often very marked, and to the slight bitterness of the mouth, are added pains about the umbilicus, a sort of painful bar extending from flank to flank, a diarrhœa of green or yellow bilious matters, often very abundant and fetid. The thirst is considerable, and the appetite is diminished; still the patient has a vague desire for food, without being able to mention any particular article which he prefers; the sense of taste is less perverted than in the preceding variety; the epigastrium is less painful, and the thirst greater; there is no vomiting, the skin is not yellow; the urine is limpid, and the pulse more increased in frequency than in hardness. The irritation principally occupies the intestines, and especially the colon; the liver is actively stimulated, and abundantly secretes bile, which is poured into the duodenum, and passes thence into the rest of the intestinal tube: this is one of the varieties of entero-hepatitis.

The fourth shade is announced by a union of the second and third symptoms; and if it supervene suddenly, with a high degree of violence, it constitutes cholera, the symptoms of which I have already described. If the morbid phenomena proceed with less rapidity, the disease presents the most complete picture of all the bilious symptoms. In both cases it is to be referred to gastro-entero-hepatitis.

These shades of the bilious affections are not all equally frequent. That which is derived from gastritis, or from a simple gastro-enteritis, is ordinary. The shades, in which irritation of the liver is manifest, are epidemic, in years the summers of which are very hot, and particularly, when the season is at the same time hot and damp. They are endemic in countries, in which these two atmospheric conditions are united in a high degree; and particularly when the air is impregnated with marshy exhalations, or any other deleterious gaseous matter. Particular kinds of food may render the occurrence of bilious epidemics very frequent, provided the seasons are at all favourable to their development. Such was the origin of the epidemic of Lausanne, described by Tissot;* of that of Teclemburgh, described by Finke;† and of that of Becêtre, described by Pinel.‡

In most of the shades of gastric or bilious affections, we observe symptoms which announce a sympathetic suffering of the encephalon; the pain is not always confined to the frontal sinuses: when it occupies the anterior region of the cranium, it cannot be doubted that the brain and its membranes are sympathetically irritated: hence proceed the headache, which is sometimes intolerable, an extreme sensibility of the organs of sight and hearing, and delirium, which if not well marked, is at least sufficiently so to render it impossible not to recognise at. These symptoms announce a dangerous complication, the extension of the irritation to the encephalon. It is absurd not to pay attention to it, under the pretext that it is only a sympathetic phenomenon. It exacts a special treatment, if we wish to prevent the conversion of the bilious fever into the state of ataxic fever: cough, with yellowish expectorations, is also sometimes conjoined with the symptoms of bilious fever, especially when the hepatic irritation predominates. We should then examine with care the state of the chest, to be assured that respiration is not embarrassed; that it exists equally on both sides of the thorax, that percussion produces a clear sound, and that inspiration is not painful; the stethescope should be employed with a view to guarding against inflammation of the pleura and the lungs.

* Histoire Epidemiæ Biliosæ. Lausaniensis, ann. 1755.
† Des Maladies Bilieuses; trad. de Lugol. in 8vo, Paris, 1815.
‡ Nosogr. Phil., tome 1. p. 60.

It has been said that bilious affections may terminate by a diarrhœa or by bilious vomiting: this is the same thing as asserting that bilious diseases cease when their symptoms have ceased. In the first shade of gastric fever, when the gastric irritation abates, the secretion of bile is sometimes suddenly re-established; this secretion, flowing into an organ still irritated, is expelled. If its presence has not exasperated the irritation of the stomach, this irritation continues to decrease, and it is then thought that the evacuation of the bile has determined the cure. The same thing occurs when the bile is poured into the intestines; if it does not prevent the diminution of the intestinal irritation, it is supposed to have contributed to the cure. It is difficult to understand how the ancients reconciled this pretended utility of the bilious evacuation with their opinion of the acrimony of this fluid. All observers of reputation, and Finke himself, have avowed that bilious fevers may terminate without evacuations.

The appearance of the urine is often changed towards the decline of these diseases. This fact is incontestable, but its importance has been magnified. We generally observe a lateritious sediment; it is of an orange colour when the liver has participated in the irritation. A general and hot sweat often announces the restoration of the viscera to their normal condition. In general, an abatement of the pungency and heat of the skin and of the vomiting and diarrhœa, and a return of appetite are good omens. The most encouraging of all the favourable signs, in those shades of the disease, in which the stomach alone, or the stomach and liver, are affected, is the return of the tongue to its ordinary state. However, in the variety which I have attributed to entero-hepatitis, the tongue sometimes becomes clean and moist without a cessation of the morbid condition.

With the exception of cholera, the prognosis in gastric or bilious diseases is never unfavourable as long as there are no other symptoms than those which have just been mentioned; at least it cannot be said that the bilious fever terminates fatally, since, whenever the symptoms become exasperated, and prostration, delirium, and other cerebral symptoms manifest themselves, the disease loses its name, and assumes that of *grave bilious fever*, *adynamic* or *ataxic* fever, the *yellow fever*, the *plague*, &c.

Pathological anatomy then teaches nothing directly with re-

gard to the nature and seat of gastric and intestinal embarrassment and of bilious fevers: I have, therefore, in all that has been said in reference to this point, only considered what we learn from the causes and symptoms. The remarks that shall be made with regard to the post mortem traces of gastro-adynamic and ataxic fevers may be applied to simple gastric fever, deducting what is due to the adynamic and ataxic symptoms. Yet the seat and nature of cholera, which is well known and is not disputed, except by a small number of physicians, and the analogy of the very intense symptoms of this disease, with the less intense symptoms of other bilious diseases, are proofs sufficiently strong in favour of our opinion of the identity of the morbid condition in the bilious diseases, gastritis, hepatitis, and enteritis, admitted by nosologists. This truth, at the present day incontestable, was undoubtedly known to Dehaen, who can only be reproached with the abuse of leeches. It redounds to the credit of this celebrated physician, that in recognising the inflammatory character of the diseases which he treated, he evinced his superiority to Stoll, whose attention was occupied only with pretended disorders of the bile, and who attached too much importance to the aspect of the skin, the tongue, and the matters discharged by the mouth and anus, and too little to the results of autopsic examination. He appears still more inexcusable when we read the following passage: " It terminates fatally, 1st, by the metastasis of the bilious humour to an important part of the economy, as the brain, the lungs, the cavities of the chest, of the pericardium, as we learn from dissections: 2dly, By an internal erysipelas, sometimes gangrenous; 3dly, By anthrax of the intestines; by a putrid degeneration supervening spontaneously, or in consequence of bad treatment." Nothing proves more strikingly how much the humoral theories fascinated the best observers and blinded their judgment.

M. Rodet, veterinary surgeon, has published an interesting article, viz: " *Notice sur une Epizootie de Fievre Gastrigues Observie a Rouen en* 1814." He here demonstrates with certainty the existence of gastro-enteritis: unfortunately, none of the horses were opened during the course of the disease. How has it happened, that no veterinary surgeon has yet conceived the idea, of resorting to vivisections, and thus resolving the most important

question of practical medicine.   This reproach bears only upon the professors of the schools of veterinary surgery, who alone can be expected to engage in expensive experiments.   The vivisection of diseased animals is one of the means which I have pointed out in my Thesis " upon the classifications," as capable of contributing much towards the perfecting of pathology.

M. Bouillaud, has reported seven cases of bilious or memingo-gastric fever, in which, on dissection, he found injection, redness, thickening, softening, and friability of the gastro-intestinal mucous membrane.   He has reported also, the results of his experiments upon animals, with a view of determining a phlegmasia of this membrane. *   The analogy of the symptoms observed in animals, and particularly of the organic alterations discovered on dissection, with those observed in man, render these experiments valuable.   Researches of this kind should be encouraged.

Treatment of Gastric Fever.

We find nothing upon *indigestion,* in our general treatises on medicine, and very little upon *dyspepsia,* to which nosologists have been content to assign a place among the neuroses of the stomach. The attentive study, however, of these two morbid conditions throws the strongest light upon the nature of gastric fever.   Has the name of *indigestion* been regarded as too trivial to find a place in scientific works?   Is the term *gastric embarrassment* more respectable? and would it be unworthy of the physician to employ the words of his vernacular tongue?

Indigestion occurs when we introduce into a sound stomach an excessive quantity of food, or food of a gross and irritating quality; and when into a stomach already irritated, we introduce, even in small quantities, food otherwise wholesome.   In the first case, the presence of too great a quantity of food determines irritation of the stomach, the digestive action of which exerts itself in vain to alter the substances, which are subjected to its action.   In the second case, this irritation is the effect of an irritating quality of the food.   In the third case, the irritation of the

* Traité Clinique et Experimental des Fiévres dite essentielles, Paris, 1826, in 8vo, p. 86.

stomach augments under the influence of food, which, under other circumstances, would have been perfectly innoxious. In these three cases, then, there is primitive or consecutive irritation of the stomach, and an imperfect alteration of the food, a state which is well designated by the word *indigestion*. We observe all the symptoms of well marked gastric irritation with coated tongue, bitter and clammy mouth, acrid, nidorous eructations, particularly when the undigested aliments prolong their stay in the stomach. These aliments, imperfectly digested, are a powerful cause of irritation, which finally ceases to act upon this viscus, either in consequence of the expulsion of its contents by vomiting, occurring naturally or produced by art, or in consequence of their passing into the intestines, which they generally irritate in such a manner as to produce acute colic pains, and all the phenomena of intestinal embarrassments. After the expulsion of these substances by the mouth or anus, we easily ascertain the fact of their imperfect digestion: they are often mixed with mucus or bile, even when the subject was in perfect health before the occurrence of indigestion. There then remain only the symptoms of simple gastric or gastro-intestinal irritation; that is to say, the tongue becomes clean, although its edges are still red, the mouth ceases to be clammy and bitter, the nidorous eructation, the fetid gas, as also the disgust for food, disappear; but the distress, pain, and heat at the epigastrium, and around the navel, continue, as well as the vomiting and nausea, the diarrhœa and tenesmus, until, finally, all the symptoms gradually disappear.

This is not always the case. When the heart and brain feel forcibly the influence of the gastric irritation, especially when the undigested food is not evacuated, and recourse is had to tonics and pretended stomachics, the pulse becomes frequent and hard, small and concentrated, and sometimes continues so during the continuance of the disease; stupor, syncope, and convulsions sometimes occur, the extremities become cold, a cold sweat covers the body, and the epigastric region becomes hot and painful.

In some persons of little irritability, indigestion produces only a disgust for food, a sense of weight in the stomach, a sort of

rumination, and few or no other symptoms of gastric irritation: the stools are unfrequent, gray or whitish, and without colic.

In general, hot drinks sweetened with sugar and slightly aromatic, are the best remedy for indigestion; the drinking of hot water, by provoking vomiting, and lavements of the same nature, are in general all that is necessary, but they must be followed up by cold drinks.

These facts throw great light upon the treatment of gastric or bilious diseases: they show that all the symptoms of these diseases proceed from irritation of the stomach and intestines, that the presence of certain substances in these organs may provoke or keep up irritation; that the evacuation of these matters is indicated, but that it does not suffice for the cure of the disease, which consists in a gastric, intestinal, or gastro-intestinal irritation, involving the liver to a greater or less extent, that stimulants may increase this irritation, cause its extension to the brain, and render it dangerous; that in certain cases the only indication is to evacuate the contents of the intestinal canal, to cause the cessation of the indigestion. Furthermore, in numerous cases the administration of emetics, of too violent a character, is followed by the development of all the symptoms of the most intense gastric fever, with or without bilious symptoms.

From the time of Hippocrates to the present day, the treatment of gastric affections has consisted in the expulsion, by emetics or cathartics, of the irritating matter which was always supposed to exist in the digestive passages. It was, however, perceived from time to time by attentive observers, that these evacuations did not always produce the good effect which was expected from them, and from this fact they drew the conclusion, that to derive all possible advantage from them, they must not be administered too soon, or be employed, except after having had recourse to certain means, capable of ensuring their efficacy. Hippocrates himself recommended to defer the evacuation of the morbific matter until it had been *concocted*. This principle is in opposition to his theory; for, if the fever be the effect of the *crudity* of this matter, why wait for its *concoction*, before expelling it. Tissot has insisted upon the advantages of delayants; Stoll has pointed out the inconvenience of purgatives; Pinel has

followed them in these two points of doctrine, but, after the example of Stoll, he advises to commence with an emetic, or an emeto-cathartic, should there exist the slightest symptoms, or even a *single symptom* of gastric embarrassment.

Now, since, according to his theory, there are no gastric fevers without symptoms of embarrassment of the digestive passages, since he places the signs of this embarrassment among the symptoms of these fevers; the consequence is, that we must always commence the treatment by the administration of an evacuant; and since the signs of gastric are more common than those of intestinal embarrassment, and since in most cases they accompany the latter, the result is, that an emetic is almost constantly indicated in the commencement of gastric fevers. In case of gastro-intestinal embarrassment, the emetic is still resorted to, since he here recommends an emeto-cathartic. This author has, it is true, spoken of bilious inflammatory fever, or ardent fever; but he has assigned the name of bilious inflammatory fever to one of little intensity, purely gastric, that is to say, one which presents no bilious or saburral symptom. That I may not be accused of imputing language to Pinel, which he has not used, I shall give in his own words, a passage which has, unhappily, been regarded as an axiom in practical medicine: " If this state of primæ viæ, (*gastric embarrassment,*) manifest itself either in its simplicity, or in one of its diverse complications, I employ an emetic, administered either with or without copious draughts of water: one or two of these symptoms well characterized are sufficient to determine me."

This aphorism has produced incalculable evils: they have been pointed out by M. Broussais, who, in a clearer manner than any other writer, has shown the dangerous consequences resulting from the abuse of emetics. If, instead of employing himself in invectives against the partisans of antimony, Gui Patin had collected with care conclusive facts, the cause he advocated would have triumphed, and humanity have been spared many a groan.

To keep principally in view the irritation of the stomach, the intestines and the liver, and to distinguish the cases, few in number, in which recourse must be had to evacuants, is the fundamental principle which should, at the present day, guide the practitioner in the treatment of gastric affections.

When in a patient, we observe only redness of the edges and point of the tongue, a whiteness of the centre of this organ, anorexia, acid eructations, a marked aversion to wine, a sense of weight at the epigastrium, and no other symptoms, except weakness of the legs, it is easy to recognise irritation of the stomach, of the slightest grade. This slight degree of gastritis requires a rigorous diet, the use of cold mucilaginous or acidulated drinks, sweetened with sugar, or even the simple use of cool and pure water, according to the taste of the patient, and moderate exercise in the open air.

If these symptoms augment in intensity, the tongue becomes dry, and the redness of the edges is brighter, red points appear in its middle, and are conspicuous amidst the whiteness of this part; the want of appetite becomes a real aversion to food, the epigastrium becomes painful, the skin hot, the pulse hard and frequent. The remedial measures which have just been pointed out, are no longer sufficient; we must add to them the application of leeches to the epigastrium, and of flannels or cloths steeped in a decoction of mucilaginous plants to the abdomen. Two or three leeches must be applied, in the case of infants at the breast; from three to eight, in children approaching the age of seven; and from ten to twelve, in adults. In every case the blood must be permitted to flow, after the fall of the leeches, as has already been observed, and for the reasons assigned in the preceding chapter.

Thus far the most skilful nosologist might be defied to decide whether the fever be inflammatory, properly so called, or a gastric fever. To the physiological physician the problem is easily resolved: the disease is gastritis, and nothing must be neglected to prevent its becoming aggravated.

When these means have not been employed, or when they have been found insufficient to arrest the progress of the disease, or, finally, when medical aid is not resorted to, until the disease has made a considerable progress, there is, in addition to the preceding symptoms, vomiting, and all the phenomena which have been enumerated as characterizing gastric fever, without bilious symptoms; the highest degree of which is the ardent fevers of the ancients. Under these circumstances, the application of fifteen, twenty, or thirty leeches must be made without delay, the

blood must be permitted to flow until we observe a meliora-
tion sufficiently great to afford us hopes of a cure: the applica-
tion must be renewed as the intensity of the disease and the
force of the vascular system indicate the necessity. In general,
it is better to establish an almost continual flow of blood by a
small number of bites, twelve or sixteen, for example, than to
renew the application of leeches; but we should not hesitate to
repeat it, when the symptoms persist in all their violence. It is
here that we have an opportunity of appreciating, at its true va-
lue, the prognosis of gastric fevers, which, they say, is always fa-
vourable, provided the disease be not converted into one of *bad
character:* a proposition which signifies that the disease is not
grave, as long as it has but little intensity.

Acidulated drinks are sometimes too stimulating, unless the
quantity of acid be very small, but, however mild they may be,
they must be renounced the moment the patient complains of
griping of the stomach, after taking them. Vinegar and water
is almost always hurtful; lemonade is generally useful, and
orangeade still more so in most cases; gooseberry-water may be
substituted for it, although it does not agree so well with most
stomachs; the decoction of cherries, and other ascescent fruits
may be used with advantage; whey is often very suitable.

Mucilaginous drinks sometimes disagree with the stomach,
not because they occasion great irritation, but because they pro-
duce a sense of weight in it, and render the mouth clammy. A
slight decoction of mallows, of dog-grass, or even barley water,
although the latter is improper when it is too thick, are often
preferable to gum arabic. The same remark applies likewise to
a decoction of the crumbs of bread.

Pure water, which so few patients drink willingly, on ac-
count of their prejudices, is in a great number of cases the best
of all drinks. But it is frequently necessary to add to it a little
sugar or liquorice. Hecquet has justly extolled the use of water
in gastric affections;* in this he agrees with Hippocrates, Galen,
and Celsus.

The quantity and the temperature of the drinks is not a mat-
ter of indifference. If the patient has little thirst, he must not

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* De la Digestion. Paris, 1747.

be obliged to drink much, but he must not be permitted to remain a long time without drinking. If the thirst be urgent, we may prescribe as much as two pints of liquid, but he must be advised to drink but little at a time. This precaution must be rigidly observed, particularly when there is vomiting. Frequently but a spoonful of liquid must be given at a time, and that only at distant intervals. In all cases, nothing must be neglected to discover the drink which produces the least irritation of the stomach, and the idiosyncrasy of the patient must always be regarded.

The drinks should generally be given cold; but they should be hot, if there are rigors. In general, it is proper on this point to consult the taste of the patient, who is ordinarily the best judge. In case of obstinate vomiting, if we are desirous of arresting it, we must prescribe cold drinks—if to promote it, warm drinks. There are certain shades of gastric irritation which require the administration of very hot drinks: perhaps idiosyncrasy has much to do with the existence of these varieties.

If I have said that we must prescribe an absolute diet, even when the irritation is slight, it is because diet is the most efficient remedy for this disease in all its degrees: a means which in many cases entirely dissipates it, and the omission of which often renders all other means unavailing. Not only must we forbid the use of meats and all rich food, as all authors recommend in the treatment of gastritis, a precept which may almost be considered idle, since the first symptom of the disease is a repugnance to food, particularly of this character; but we must likewise proscribe both, which patients are often compelled to take against their will, or which they call for, notwithstanding their aversion, in the hope that it will strengthen them. M. Broussais has not gone too far in asserting that the lightest broths may occasion fatal relapses. This is one of those practical truths that cannot be too generally inculcated, but which will be resisted for a long time, on account of the aversion of patients to an absolute diet, and the less excusable prejudices of the physician.

A slight decoction of sorrel is beneficial, when acidulous drinks are supported by the stomach: it may be substituted for them in most cases, but we must not add to them either butter or salt.

Simple emulsions, recently prepared, and orgeat, when there

is much heat of the skin, water charged with a small quantity of carbonic acid, when there is nausea, may be prescribed, provided the irritability of the stomach be not very marked.

The minute details which I have given, are necessary: many of a similar character will be found in the course of this work, since it is necessary to attend to them to prevent the aggravation of diseases, and their fatal termination. With many of these details physicians are acquainted; there are others to which they unfortunately attach too little importance. Of some among these principles, many physicians are ignorant: it is important that the student be not left in ignorance with regard to any of them, since they constitute valuable elements of success.

I know, and the remark is intended for the physician as well as for the patient, I know that we may sometimes deviate from the narrow path pointed out by experience; but in this case the disease is of longer continuance, than when a more severe regimen is observed. It is much more common to see it, un- der these circumstances, become aggravated, extend to a num- ber of organs, attain a high degree of intensity, and often oc- casion the death of the patient, who has not obeyed his physi- cian, or who, through the inattention of his physician, has not been preserved from the influence of the causes capable of ag- gravating his disease. It is here that a proper opportunity of- fers to enforce the necessity of absolute diet, because it is par- ticularly indicated in gastric fevers: the remarks that have been made upon this subject are, throughout, applicable to the treat- ment of the diverse shades of gastritis, which shall be treated of in the following chapters.

Nourishment should not be allowed until the pulse has lost its frequency, and the skin its heat.

Emollient fomentations are very useful; they should be resorted to, whenever there is much heat at the epigastrium: they have also the advantage of keeping up the flow of blood after the fall of the leeches. But, to be productive of good effects, they should be preserved, if not at a very elevated temperature, at least at such a degree of heat, that the patient may experience no sen- sation of cold, when the cloths are renewed, or while they are in contact with the skin; emollient fomentations may be substituted

for baths, to which we cannot have recourse when the circula-
tion is accelerated and the head painful.

The constipation which attends gastric irritation, is not a for-
midable symptom; but since it is demonstrated that the delay
of fecal matter in the intestines, occasions headache and heat of
the skin, it is proper to prescrible lavements of water, which
may be either pure or mucilaginous, or acidulated, or mixed
with oil or with honey.

The pain in the head, which so frequently accompanies gas-
tric irritation, generally disappears with it, when our remedial
attempts are successful. But if the headache be intense, and pre-
dominate over the other symptoms, pediluvia, cold applications
to the forehead and leeches to the temples, are indicated, just as
though there were no gastric irritation; for it is of importance
to prevent the development of arachnoiditis, which is to be feared
from the fixed character and intensity of the pain and its confine-
ment to the frontal region. I shall again discuss this point, when
upon the subject of ataxic fever.

Such are the only therapeutic means to which we should have
recourse in gastric irritations, with or without the phenomena of
reaction of the heart, and without bilious symptoms.   This
treatment is not less suitable in intestinal irritation and in those
cases in which both the stomach and bowels are involved.

When to the signs of gastric irritation with or without febrile
symptoms, are superadded those which announce that the irri-
tation is shared by the secretory apparatus of the bile, we must
in the first place have recourse to the same means; then all the
symptoms diminish gradually in intensity, or those of gastric ir-
ritation diminish, while the bilious symptoms continue, or final-
ly the latter cease while the former continue. In the last case
we must insist upon the means which have been pointed out.
In the former we must continue to employ them as though the
irritation were confined to the stomach; in the second we must
have recourse to leeches applied to the right hypochondrium or
anus, persevere in the use of acidulated drinks and prescribe the
warm bath.   When no pain is perceived in the hypochondrium,
even when strong pressure is made upon this region, when there
is no uneasy sense of pain and numbness extending thence to the
right shoulder, when the skin does not change its colour, when

the urine is not of a deep yellow and the excrements of a whitish gray, when the tongue is uniformly and thickly coated, when there is no thirst, and no pain at the epigastrium even when strong pressure is made, no heat of the skin and no acceleration or hardness of the pulse, we may prescribe an emetic, provided the disgust, the bitterness of the mouth, and the other symptoms do not yield to the means which have been advised.

Wherever there is heat of the skin, acceleration of the pulse, and redness of the tongue, emetics are contra-indicated; nor, to render their employment improper, is it necessary that the pulse should be hard and the tongue dry and cracked; consequently, in every gastric fever, properly so called, whether it be ardent or the ordinary fever of our country, and especially in the bilious fevers of hot countries, an emetic should never be administered. It can never be prescribed with impunity until after the cessation, not only of the febrile symptoms, but likewise of the symptoms peculiar to gastric irritation. When the latter symptoms are not exasperated by the exhibition of the emetic, those of the biliary apparatus frequently are, and thus the fever is exasperated, and becomes more formidable.

It would not be rational to prescribe an emetic in all cases of gastric embarrassment, unattended by signs of irritation of the stomach. There are no candid practitioners who do not acknowledge, that, to their great surprise, they have often seen this state grow worse, even after the emetic had produced the desired effect of causing abundant evacuations of bile. What succeeds best, in conjunction with acidulated drinks largely administered, are laxatives, such as the supertartrate of pot-ash, and lavements containing a small dose of the sulphate of soda or of magnesia. These evacuants have none of the inconveniences of emetics, provided the intestines are not irritated; for, in this latter case, they increase the heat and dryness of the skin, the uneasiness and thirst.

When we prescribe an emetic, tartarised antimony is to be preferred, because the action of this medicine is sure and its effects well known. But it must always be administered with caution, and never in a dose of three grains at the commencement, as is sometimes done; much less should this dose be thrice repeated. Its combination with ipecacuanha is always irrational.

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It is especially at the commencement of gastric fevers, and during the existence of the state denominated gastric embarrassment, that an emetic has been prescribed. It has been asserted that it dissipates this embarrassment, the duration of which is sometimes so protracted, and that it unmasks the gastric fever, which succeeds it; that, administered in the course of this fever, it simplifies it, and in general produces a salutary shock. Let us examine whether all these advantages are to be expected.

An emetic does not put an end to all cases of gastric embarrassment, since it so often happens that the fever declares itself after their exhibition. It is not in reality advantageous, except in the case of persons subject to bilious diarrhœa, of short continuance; of those who have contracted the habit of taking an emetic at certain periods of the year; of those who eat voraciously of gross and stimulating articles of food; of corpulent and pale persons of lax fibre and of little irritability; in cold and damp climates, and in northern countries. In this manner is to be explained the success of Stoll, Finke, and many other physicians, who practised in countries, the inhabitants of which, endowed with little sensibility, make use of an indigestible diet, and are addicted to excesses.

When the gastric fever develops itself in the train of gastric embarrassment, after the exhibition of an emetic, that is to say, when, after its administration, the skin becomes dry, hot, and pungent to the touch; the pulse frequent, quick, and hard; the thirst intense, the mouth dry and the tongue red at its edges, is it not evident, that, instead of having unmasked the fever, the emetic has determined it, by exasperating the gastric irritation, even when it has dissipated the bilious symptoms? Now, the advantage which the patient derives from the disappearance of these symptoms, which are generally secondary, is more than counterbalanced by the augmentation of the principal irritation. It is, moreover, far from being the case that the bilious symptoms always yield to an emetic, particularly when the phenomena, which I have just enumerated, develop themselves, or assume increased intensity. More frequently, as I have already said, all the gastric, hepatic, and sympathetic symptoms become exasperated. Nothing less than blindness of the grossest kind would

behold in this exacerbation of the disease only a salutary effect of
the remedial measure resorted to.

Stoll has strongly recommended emetics in the course of bi-
lious fevers; but he would have the patient prepared for their
exhibition, by bleeding, the antiphlogistic regimen, and diluents,
when the patient is young or in the vigour of life, of *rigid fibre*
or plethora, when inflammations are prevalent, and finally, when
a heating regimen and stimulating medicines have been used.
Doubtless he would have unhesitatingly rejected the idea of sim-
plifying these fevers, by the premature administration of evacu-
ants.   If this celebrated partisan of emetics thought it necessary
to have recourse to preparatory means, is it not absurd to reject
these means, at the present day as at least useless, and to pretend
that this preparation is attended with the inconvenience of occa-
sioning the loss of a precious period, and of retarding the cure.

It is only after the administration of acidulated, mucilaginous,
and refrigerant drinks, that an emetic can be prescribed with ad-
vantage: under these circumstances, alone, it simplifies the dis-
ease by provoking the secretory action which must succeed the
dry irritation of the gastric membrane.   To render this measure
innocent in the first stage of the irritation, it is necessary that the
latter be slight.   Nothing justifies, I repeat it, the administration
of an emetic, when, from the commencement of the disease, the
skin is acrid and hot, the pulse frequent and hard, the tongue dry
and the thirst intense.   When we are called to a patient, to whom
at the commencement or at any other period of the fever, an
emetic has been prescribed, we should entirely discard the idea
of a pretended simplification, and have immediate recourse to local
antiphlogistic means, should there be the least increase of inten-
sity in the gastric symptoms, or any reason to apprehend it,
whether the bilious symptoms have disappeared or whether they
persist with the signs of gastric irritation.

What is meant by the favourable shock occasioned by the
emetic?   Does it indicate the abundant transpiration which this
medicine determines, and the afflux towards the head, so often
dangerous, which it occasions? or, is the expression used to de-
signate a special and unknown action?   This last hypothesis me-
rits no consideration.   As to the sur-excitation, more or less
permanent, of the skin, determined by the action of this thera-

peutic agent, there is an important distinction to be observed, which has not yet been made with sufficient care. The sur-excitation of the skin and the perspiration always occur during vomiting; but the melioration of the state of the stomach, the intestines, and the liver, follows it only in a very limited number of cases. It is not, then, to these sympathetic phenomena, purely secondary, that we should attribute the diminution of the irritation of the digestive passages, when we are so fortunate as to obtain it. This opinion would be equally erroneous with that of those authors who attribute the cure of fever to the profuse perspiration observed at the decline of many febrile diseases.

It is proper to remark, that emetics sometimes procure a marked melioration during some hours, or for the space of one or more days, but that, after this period has elapsed, we observe a renewal of all the symptoms, provided the subject be at all disposed to gastro-enteritis. How great is the imprudence of those physicians, who, notwithstanding the return of the symptoms, repeat the administration of this medicine! In vain they cite certain cases in which they have triumphed over the malady, by means of a second, or even a third emetic. Like most of the rare cases of the successful employment of therapeutic agents, those instances have been productive of the most unhappy results to humanity, because they have induced practitioners to prescribe emetics, in a number of circumstances, in which they are deleterious. From not comparing attentively the few instances of success with the numerous failures, they constantly do harm, without the probability of ever being useful.

M. Chaufford is of opinion, that emetics may prove useful when administered four or five days after the entire cessation of the fever, when the head is altogether free from any affection, the tongue remaining saburral and the appetite languishing. He administers, in such cases, twenty grains of ipecacuanha; the patient should drink copiously; this dose is sufficient in most cases without resorting to purgatives. *

Cathartics may be less injurious than emetics, because the latter often extend their action, not only to the stomach, but also to the intestines, while the former irritate the mucous membrane of the intestines alone, the irritation of which is usually of short

* Traité sur les Fièvres. Paris, 1825.

duration.   But, like emetics, they exalt the intensity of the symptoms, by exasperating the gastro-intestinal irritation, whenever they are administered at the commencement or during the course of the gastric fever.   They cannot be given with impunity, except at the decline of gastro-intestinal irritation, and only in a small number of cases, analogous to those which admit of the employment of emetics.   They should be preferred to the latter in old men and in persons who have contracted the habit of purging themselves every year at certain periods.

It would be superfluous to demonstrate the absurdity of the advice given by the partisans of the humoral pathology to purge on alternate days; but I cannot pass over in silence the dangers of the combination of an emetic and cathartic.   If when admitered singly each of these two measures is rarely useful, ordinarily dangerous, often fatal, what will be the result of combined action!   Perhaps the danger of an emetic would not be so great but on account of its frequently extending, as I have just remarked, its irritating action not only to the duodenum but likewise to the rest of the intestine.   By the well directed employment of the most rigid diet, of drinks, acidulated, or only sweetened, of the local abstraction of blood, of fomentations and emollient lavements, we obtain the cure of gastric affections sometimes in one day, generally in a few days, and most frequently before the seventh day.   We do not see them under this treatment continue during two or three weeks, and much less for the space of a month or six months, as so often happens when the emetic treatment is pursued.

After we have procured the prompt disappearance of the gastric symptoms, the bilious symptoms sometimes persist for some days, without heat of skin and acceleration of pulse, a fact that indicates the continuance of the irritation of the liver.   In this case a saline cathartic may sometimes be prescribed with advantage: it is generally sufficient to continue the diet, but with less rigour, as well as the employment of acidulated drinks, to obtain the cure of the latter symptoms.

I shall be reproached by some with having insisted so much on the disadvantage of evacuants in the treatment of gastric fevers, while others will be dissatisfied that I have not altogether proscribed their employment. I do not flatter myself that I have

pointed out with perfect accuracy the cases in which these means are indicated. I have, however, made the attempt, firmly persuaded that there is no therapeutic agent which we may not employ with advantage in certain cases, and believing that men whose works form an epoch in the history of medicine should not be treated with disrespect.

Diarrhœa is one of those symptoms of gastric fever, which prove how little is to be expected from the employment of evacuants. When it occurs, one of the most efficacious means of arresting it, is an absolute diet.

The patient should be directed to drink little at a time, and only of mucilaginous fluids, hot and sweetened with sugar; acidulous drinks should be avoided, cataplasms should be applied hot to the abdomen, coldness of the feet should be prevented or remedied by the application of hot bricks enveloped in cloths, or by any similar expedient. The application of leeches on different points of the abdomen, and particularly above the region of the groin, or to the anus, is often necessary, and always useful.

To what curative means must we resort in cholera? We are not in possession of a sufficient number of well observed facts, to warrant a positive answer to this question. Sydenham has proved that in these cases, even the mildest evacuants are always dangerous, and that mucilaginous, acidulated and edulcerated liquids, given abundantly in drink, and even in lavement, assuage the violence of this terrible disease, and often entirely arrest its progress. He has observed, that narcotics, prescribed at the commencement, diminish the pain, but at the same time occasion stupor, without meliorating the condition of the patient. He is of opinion that they should not be prescribed until after the disappearance of the violent symptoms, or when the subject is entirely prostrated by the disease. Every one at the present day agrees with this celebrated physician with regard to the danger of emetics and purgatives in cholera, and the utility of the drinks denominated *diluents*. But are there, in reality, cases in which the employment of narcotics is proper? Are there not cases in which the local abstraction of blood is indicated? These questions can be resolved by experience alone. It is much to be wished that physicians practising in the south of Europe, in

Africa, in the East Indies, and in the hot climates of America, would direct their attention to these points. The inefficacy, and even the danger of general blood-letting in cholera, should not, in my opinion, prevent the employment of topical depletion. I have seen this mode of abstracting blood arrest, often almost instantaneously, colics of the most violent character, which if treated by other means, or abandoned to nature, would have continued with the same violence for many days. The nature of the symptoms of cholera, and the unequivocal traces of inflammation discovered after death, favour the opinion that local blood-letting might diminish the ravages committed in hot countries, especially in India, by this disease, which is more fatal in those countries than in the north, and even in the south of Europe. The state of the skin should not be neglected. Excessive heat occasions a sur-excitation of the membrane, the sudden cessation of which, occasioned by a draught of cold air, is the most frequent occasional cause of gastric and hepatic maladies in hot climates.

In all diseases, and of course in cholera, it is necessary, previously to the application of leeches, to recall the blood to the skin, when it is cold and pale, otherwise they will not bite or flow. In this case, stimulants of the mildest kind, or the most diffusible, such as hot water sweetened with sugar, with the addition of a small quantity of ether, hot fomentations, the vapour-bath may happily fulfil the indication of restoring the activity of the skin.

When, in the course of gastric fever, there arises irritation of the bronchia, of the pulmonary parenchyma, of the pleura, of the kidneys, or the bladder, it is often necessary to apply leeches to the sternal region or to the sides of the chest, to the loins, or to the perineum or even to resort to venesection, and the other means appropriate to the inflammation of each of these organs. It would often be dangerous to rely upon the disappearance of those secondary phlegmasiæ with that which they complicate, and to permit them to make a progress which nothing afterwards might be competent to arrest.

Inflammation of the peritoneum sometimes supervenes upon that of the stomach and intestines, or replaces the affection of the latter organs; the diarrhœa ceases, the abdomen becomes

painful in most parts; the body shrinks, the pulse becomes small; gastric fever then assumes the adynamic character, and consequently is classed among those fevers which shall be considered in a subsequent part of this treatise.

Finke has described, under the name of *anomalous bilious fevers*, irritations of the encephalon, of the skin, of the mucous membrane, of the pharynx, of the bronchia, of the articulations, of the kidneys, of the inferior extremity of the rectum, sometimes produced by a prevalent gastro-intestinal irritation, with or without hepatitis, at other times primitive, and which, in the latter case, were cured by provoking a transient gastro-enteritis, by the employment of emetics and purgatives.

When an epidemic gastritis or enteritis, prevail in a country, all the inhabitants are not affected, because, although all are exposed to the causes, which, by irritating the digestive organs, cause the epidemic, yet all have not the same idiosyncrasy. In some, these organs alone are affected, in others the irritation extends to the lungs, the encephalon, and the kidneys, affecting them not merely to that feeble degree which is observed in all cases of gastro-enteritis with sympathetic phenomena, but with great intensity. In the latter cases, when the symptoms of the irritation of the digestive organs, and those of the irritation of one of the organs just named, are of equal intensity, there is said to exist a *complication* of one fever with another, or with a phlegmasia. If, on the other hand, the irritation of the lungs, of the encephalon, or of any other organ, be manifest, and that of the digestive organs, obscure or not at all observed, physicians preoccupied by the malady which they observe in the greater number of persons, committed to their care, imagine they see it every where,—see it when it does not exist, and admit but two varieties of the epidemic disease; viz. the one, *true, open, legitimate;* the other, *false, anomalous, spurious:* for both these conditions they make use of the same curative means. The result of this practice is as follows: in case the digestive organs are free from irritation, the emetics and purgatives, sometimes arrest the anomalous affection with surprising promptitude; because the digestive organs are predisposed to irritation by the prevailing morbific causes. The irritation caused by the evacuants resulting from a transient cause, generally ceases with

this cause, and the disease is cured; but, if the predisposition to gastric irritation be very marked, the evacuants determine a gastro-enteritis. The affection, against which the remedial measures were directed, even in this case, sometimes ceases, although more frequently it continues: in place of an irritation confined to a single organ, there now exists a complicated gastric fever; that is to say, an irritation of the stomach, complicated with an intense irritation of an organ more or less remote from the digestive apparatus.

It results from this exposition of facts, that we should be very reserved in the employment of evacuants in the treatment of irritations, which manifest themselves, during the prevalence of a gastric epidemic, even when the digestive organs do not partake of the irritation; that it is better to treat these irritations as though they originated under any other circumstances, and, finally, that when the gastric or hepatic irritation is conjoined with the affection, we must employ local antiphlogistics in the case of all the organs which partake of the irritation, and not resort to evacuants under the vain pretext of restoring the disease to its true character.

Epidemic gastric diseases require the same treatment as sporadic cases; the principles are the same; the application of them should only vary on account of the idiosyncrasy of the subject, and the intensity, seat, and extent of the irritation.

At what period of gastric fevers and of similar affections, should we allow the successive use of broth, soup, of cooked fruits, and, finally, of solid food? Broth should not be allowed until the heat of the skin has ceased to be acrid to the touch, and this membrane presents no trace of morbid heat, until the pulse has ceased to be tense and frequent, and the edges of the tongue are no longer red. It is proper to mix the broth with a decoction of gooseberries, of lettuce, or of beet: to render it less irritating afterwards, there may be added a slight decoction of rice, barley, bread, or grouts, and by degrees the patient advances to the use of soup, and, finally, resumes his habitual diet. During convalescence, a long time should elapse before the use of wine is allowed, and even wine and water should not soon be used. Before allowing the use of meat, it is proper to give the patient acid fruits

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cooked with sugar, and fresh vegetables cooked in water, and but slightly seasoned.

If there be constipation, but little food must be allowed while lavements are to be administered, and the patient should drink veal-water, a decoction of sorrel, of tamarinds, or of prunes, honey and water, or whey. There are only two cases in which purging will be proper; viz. first, when, after a return to the ordinary regimen, the tongue becomes foul, and the appetite diminishes or disappears, without any preternatural heat of the skin, or acceleration of pulse; and, secondly, when the patient has contracted the habit of taking *medicines of precaution,* at stated periods. It must not be forgotten, that a purgative may renew all the symptoms. If this principle be kept in view, the danger of abusing evacuants will be avoided.

A severe regimen, the use of vegetables, the continuance of diluent drinks, moderate exercise, the cold bath in the case of young subjects, taken either before or after sun-set, according to the climate, are the most proper means of preventing the relapses so frequent after gastric fevers. These relapses are almost always attributed to an indigestion. This is easily accounted for, when we consider that gastric fever is only an irritation of the centre of the digestive system; to prevent which I cannot believe, that any experienced physician of the present day, would prescribe bitters, with the view of restoring the *tone* of the stomach. This Brunonian practice, is probably now abandoned by those who formerly recommended it, and whose names, therefore, need not be mentioned. The administration of tonics at the decline of bilious fevers, far from rendering convalescence short, tends directly to its prolongation.

CHAPTER IV.

Of Mucous Fever.

SELLE, has designated by the name of *pituitous fever*, and M. Recamier, by the name of *pepsic mucous fever*, the diseases preceded and accompanied by the following phenomena; viz. a cold and damp atmospheric constitution, food of a bad quality, or in small quantity, or the total want of it; the tongue charged with a mucous substance, white, and, as it were, lardaceous, which likewise covers the mouth and pharynx; a mucous coat, covering the blood and formed in layers, the interstices between which are filled with serosity: the clot dissolved, a slow, feeble, and intermittent pulse; the urine clear and limpid.   These characters, taken from Sarcone, give but an imperfect idea of the fevers observed by this physician, and of those which Rœderer and Wagler have described with so much care.   Pinel has endeavoured to give an exact summary of the observations of these three physicians.   His description of the disease is as follows; viz.

A sense of general malaise, of weight in the limbs, disturbed sleep, loss of appetite and acid eructations, often announce the invasion of the mucous fever, which commences in the evening or during the night, with a sense of cold without trembling, felt first in the feet, and afterwards pervading the whole body.

The symptoms of this fever, are the following; viz. a whitish and moist covering of the tongue, a viscous, and sometimes an abundant salivary secretion, a sour or nauseous taste, aphthæ in the throat, on the parietes of the mouth and on the lips; thirst, generally of little intensity, want of appetite, and sometimes a marked repugnance for food, acid or nidorous eructations, a sense of weight at the epigastrium, and a swelling of this part, nausea, a vomiting of white viscous and transparent matters, insipid

or acid; sensibility of the abdomen awakened by pressure; co-
lics, flatulency; sometimes constipation; at other times a diar-
rhœa of matters similar to those ejected by vomiting, which are
sometimes bloody, and the evacuation of which is attended with
tenesmus; frequently a passage of intestinal worms by the mouth
or by the anus; the urine suppressed or very abundant, of a ci-
tron colour at the commencement, thick, troubled, white or red-
dish, with a sediment which is grayish, about the middle of the
disease, and lateritious towards the termination; it is sometimes
passed with difficulty and even with pain.   The temperature of
the surface is not more elevated than in health.   When the skin
is hot, it is only so at intervals, and this heat does not appear
acrid, except after a prolonged touch.   The cutaneous transpi-
ration is rather diminished than augmented, without the skin
being very dry: there is often a partial sour sweat, which occurs
especially during the night, in the morning, and during sleep,
principally towards the decline of the disease.   Diverse erup-
tions appear on the skin during the night, disappear, and mani-
fest themselves anew.   The pulse, sometimes differing but little
from the natural state, is generally weak and small, and often
slower than in health; but in the evening and during the night,
it becomes frequent.   The patient experiences a sense of weight
and pain at the top and back of the head,—is affected with som-
nolency and with vertigo, when he sits up, and frequently suf-
fers from a confusion of ideas: his mental powers are prostrated;
he is sleepless,—always dejected; restless and despondent; he
is constantly complaining, and suffers from contusive pains, often
insupportable, in the hypochondria, along the limbs, and in the
articulations.

To those symptoms, are frequently joined others, such as in-
termission of the pulse, a dry cough, dilatation of the pupils,
augmented lachrymal secretion, hollowness and brilliancy of the
eyes, itchiness of the nostrils, pains at the root of the nose, pe-
culiar noises in the ear, deafness, grinding of the teeth, trismus,
risus sardonicus, palpitation, dyspepsia, præcordial distress,
pricking pains at the epigastrium, partial or general convulsive
movements.   These symptoms, according to Van Den Bosch,
Rhan, and Bruning, indicate the presence of worms in the di-
gestive passages; but Dehaen has proved, and the experience

of every day confirms the fact, that all these phenomena may exist independently of worms.

The mucous fever does not always follow a uniform course: we observe exacerbations, and even distinct paroxysms; sometimes occurring at indeterminate periods, though generally in the evenings or during the night. They usually recur every day, though often with the quartan type, sometimes, with the double tertian, and more rarely with the tertian type. There is a remarkable slowness of the pulse at the termination of those exacerbations, and the heat and sweat is but little augmented. The paroxysms are often very long and interrupted by irregular rigors.

The duration of this fever, varies from fifteen to forty days and upwards. It seldom terminates in a week, and its continuance is longer in proportion as the paroxysms are more marked. It terminates, 1st, by a return to health, after vomiting, diarrhœa, aphthæ, pustules, or a miliary eruption, general sweats, a flow of urine with a slight sediment, which is white, lateritious, or yellow; or, finally, after an abundant salivation: these symptoms may manifest themselves at variable periods, which it has been in vain attempted to determine; 2dly, by the development of unequivocal symptoms of rheumatism, pleurisy, or peripneumony; 3dly, by death, after an obstinate diarrhœa, a pleurisy, an obscure peripneumony or arachnitis, excessive partial sweats, an increase of the symptoms of weakness or of the nervous symptoms; 4thly, by a chronic affection of the bronchia, of the lungs, of the viscera of the abdomen, by anasarca or ascitis. In the latter cases, the fever often becomes intermittent, and is indefinitely prolonged.

The complication of the mucous with the inflammatory fever, admitted by Rœderer and Wagler, is contested by Pinel. The complication with the bilious fever has been observed by the same authors, and by Plenciz. To the principal phenomena of mucous fever are then joined some of those of the bilious fever; such as force and hardness of the pulse, at least at intervals; a greater degree of thirst, the presence of bile in the matters vomited, and in the alvine dejections. The mucous fever, according to Pinel, may be complicated with high inflammation of the alimentary canal, tending to gangrene, a comatose state, with

an intense affection of the lungs, or with any other inflammation: complications which reverse the ordinarily favourable prognosis of this disease.

Relapses are frequent in the convalescence from mucous fever.

It has been said of the mucous, as well as of the gastric fever, that it could not occasion death except by complicating itself with adynamy or ataxy; but before this theory was proposed, we were in possession of admirable descriptions of the traces left by the disease, which I shall describe in a summary manner.

In 1761, at Gottingen, Rœderer and Wagler found, on post mortem examination, the albumen distended by a fetid gas, and serosity in the cavity of the peritoneum; 2dly, the serous membranes of the intestines covered with *bluish*, *blackish*, and *gangrenous* spots, more or less extended and numerous; 3dly, the gastro-intestinal mucous membrane always *thickened, inflamed, red,** *bluish, ash-coloured, blackish, gangrenous*, spotted with *red points*, with aphthæ, with vegetations, or little pustules formed by follicles largely developed, and very apparent, and covered with a thick, and frequently a tenacious mucus: the intestines often filled with lumbrici. The alterations of this membrane generally involved the stomach and small intestines, particularly the duodenum, which sometimes was alone affected. The stomach was rarely devoid of redness, but the follicles were less developed, except near the pylorus; the membrane of the great intestine frequently participated in the alterations of that of the small intestines, and was, even more frequently than the latter, affected with vegetations, and covered with ulcerated spots; 4thly, the mesentery inflamed or gangrenous, principally in the parts of this membrane which corresponded with the inflamed or gangrenous portions of the intestines; 5thly, the mesenteric glands frequently enlarged, hard, inflamed, red, or brown, especially those which corresponded to the same portions of the intestines; 6thly, the liver generally granulated, often very much enlarged, hard,

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* Semper in canali alimentari ham externæ quam internæ inflammationis notæ observantur. Rœderer et Wagler, De Morbo Mucoso. Gœttingues, 1743, p. 242 et 249. This quotation is not unnecessary, since the expressions of these excellent observers have been singularly misquoted.

sometimes red or blackish at its surface, the spleen of a deep blue; large and soft, or small and hard; 7thly, the lungs often adherent, inflamed, hepatized, gorged with mucosity, sometimes purulent, often tuberculous, the bronchia frequently red; the bronchial glands often enlarged, black, and hard; the pericardium more or less filled with a serosity which was sometimes bloody.

During the epidemic mucous fever observed at Naples, in 1764, by Sarcone, Cotugno, Gervasi, and other celebrated practitioners, the examination of the body gave the following results:—

More frequently, says Sarcone, the internal changes did not correspond to the violence of the most formidable symptoms of the disease, particularly when convulsions have been the principal phenomena, and when the patient had fallen a victim to their violence in the course of the first week, or, at the farthest, in the commencement of the second week. But when the disease had manifested an extreme degree of activity, great changes were observed in the body. When meteorism had preceded death, the viscera of the abdomen displayed, on examination, unequivocal signs of the highest degree of *corruption*. Most frequently the intestines were marked with livid irradiations, or with spots resembling petechiæ. Their cavity was almost always covered with a tenacious and shining mucus, sometimes of an ash colour, at other times, yellow, and resembling a species of membrane, which, when detached, discovered the subjacent part inflamed, or gangrenous. The alterations were not always more serious in the small than in the large intestines. Frequently the latter were wonderfully swelled, covered with mucus, and a foul matter of various aspect, and extremely fetid. They were generally swelled unequally, and as it were, strangulated in certain points; this phenomenon was observed particularly in the colon, which was sometimes found loaded with dry and hard fecal matter: worms are not always found. The great intestine was generally erysipelatous in those who had been affected with a diarrhœa, which had passed into dysentery, and continued until death. This appearance sometimes extended to the small intestines. In this case, the mucous membrane appeared to be destroyed in certain points, and, in some places, was absolutely wanting: in certain places which were thus denuded, there transuded a sanguino-

lent matter.   In other parts of this intestine, there was a sort of
incrustation of thick and shining mucus, under which the mem-
branes were usually found red, covered with small white pus-
tules, resembling aphthæ, or marked with spots which were livid,
or pale and ash-coloured.   In two patients who had suffered from
dysentery, the rectum was found affected with an erysipelatous
inflammation.   In the cavity of the duodenum, and in its vici-
nity, the bile had left traces of its passage: what these traces
were, has not been stated.   The stomach generally appeared di-
minished in size.   Most of the victims of this epidemic had
suffered much from hunger.   The parts of this viscus which
were most sensibly changed were the cardia and the pylorus:
these parts appeared erysipelatous, or marked with sanguineous
irradiations, or too morbidly white, or of a deep and sometimes
of a gangrenous red.   The mucous membrane of the stomach
was covered with a tenacious mucus, or with a small quantity of
a yellow or greenish matter.   This mucus and tenacious cover-
ing, extended as far as the œsophagus, where it formed a kind of
false membrane.   When there had been no alvine dejections, the
gall-bladder was gorged with bile.   The substance of the kidney
was always found *vitiated,* when death had been preceded by a
violent hiccough.   Cotugno states, that he had observed that the
mesenteric glands, nearest to the intestines, were increased in
size.   On one occasion, only, the traces of inflammation of the
diaphragm were observed.   The pleura was covered with a thick
false membrane.   Large extravasations of serosity, or of a pure
sanguineous matter, were almost always found in the chest.   The
lungs were often hepatized, and, as it were, emphysematous.
On opening the chest, they appeared swelled and distended; but,
upon being divided or pricked, they contracted instantaneously.
Demauro found serosity upon the brain, and in the ventricles,
the meninges hard, thick, and steeped in a thick and tenacious
lymph.

    The history of the epidemic of Naples, has often been cited:
but the anatomical researches have been passed over in silence,
because they did not fall in with the prevailing theories.   Sar-
cone himself did not know how to turn them to advantage: we
may, however, remark, with this physician, that it is useless to
advocate post mortem examinations with those who consider

them unnecessary, because such opinions generally result from vanity or ignorance. "Cadavera hominum morbis denatorum medico secunda sunt mamisque inquinandæ ut inveniat quæ morbi sit sedes, quæ causa, quis exitus antecedentum symptomatum; qui demum effectuum omnium in antecedenti morbo observatorum eventus."* "The opening of bodies," says Lepecq,† "ought to inform us what organs have suffered lesion, and in what their morbid alterations consist."

The pathological anatomy of the alimentary canal will find a more appropriate place in the following chapter.

The following causes have been assigned to the mucous fever; viz. infancy, old age, the female sex, a lymphatic temperament, a state of languor or paleness, chlorosis, a constitution weakened by scurvy, or chronic intermittent fever; 2dly, A residence in low, damp, marshy districts, deprived of the solar rays; the season of autumn; cold ground with humidity; want of cleanliness, the bath after meals, the suppression of habitual cutaneous diseases, of arthritis or rheumatism; 3dly, The want of food, or, at least, of fresh vegetables, the use of indigestible food, such as farinaceous articles, not fermented, unripe, sweet or acid fruits, damaged provisions, muddy, brackish water, the privation of wine where it has been habitually used, the abuse of emetics and purgatives, intestinal worms, organic lesions of the abdomen, such as tabes mesenterica, excessive evacuations, chronic catarrh; 4thly, The abuse of venery, prolonged watching, excessive study, inactivity, or too active a life, habitual depressing, moral affections, &c.

In the preceding chapters it has been thought unnecessary to insist on the nature of inflammatory and gastric fevers: since, for the sake of avoiding repetition, this point will be discussed in a general manner at the end of this work, and since few physicians of the present day deny that these fevers are caused by irritation. As there are many who do not entertain the same opinion with regard to the mucous fever, I must enter into some details to prove that this fever consists in an irritation which is not of a peculiar nature, and which is not general.

* Baglivi Praxis Medica, l. 1, c. 5.

† Collection d'Observations sur les Maladies et Constitutions épidémiques. Paris, 1776, 3 vol., in 4to.

It cannot now be necessary to refute the opinions of Galen, of Charles de Pois, Selle, Stoll, Sarcone, Rœderer, Wagler, and J. P. Frank, with regard to the influence of the serosity, the gluten, and the phlegm in the production of the mucous fever. Notwithstanding his aversion to the humoral pathology, Pinel does not appear to be far from admitting that superabundant or vitiated mucosities, contained in the alimentary canal, may produce this fever. Yet he remarks, "We cannot but recognise a primitive affection, that is to say, a *peculiar* irritation of the mucous membrane of the primæ viæ; which, by a sort of sympathetic correspondence with the other symptoms of the animal economy, produces the order of mucous fevers."* But, before he recognises in this vague manner the irritation of the stomach and intestines, which produces these fevers, he insists upon the necessity of remedying the atony of the viscera, the atonic relaxation which appears inseparable from the affection of the mucous membranes, of preventing a long continuance of the irritating matters in the alimentary canal, as well as of obviating the too debilitating effect of evacuants. The incoherency of this theory and of these precepts is so striking that it needs no demonstration.

It is supposed that the causes of mucous fever act by debilitating; but there is not one of these causes which is not found among those which determine the most highly characterized inflammations; we cannot, therefore, judge of their mode of acting from the nature of the diseases which they produce, nor can we determine the latter, from the circumstance of these causes conducing to their production. The vital action, far from being languid in infants, is, on the contrary, more energetic than in adults, at least in the circulatory and digestive systems, and even in the brain. In every infant, one of these organs predominates, but in general the digestive system is the most active. It is, therefore, not surprising that the mucous fever is a common disease of this early period. In old men it is in the digestive apparatus that the vital action persists longest; their stomachs are said to be always deranged, and this is true: but this derangement is generally a sur-excitation, which manifests itself only in a disturbance of function, on account of the weakness of the sym-

* Nos. Phil. tome 1, p. 133.

pathies at this age. Women are not weaker than men; they are even in general more irritable, and their digestive apparatus is more subject to irritation than that of men: it cannot then be wondered, that in an epidemic mucous fever, they are more readily affected. Paleness, slowness of motion, muscular weakness, whether habitual or dependent upon convalescence from any disease, do not prove that the digestive organs are labouring under atony; the contrary is more frequently the case. There is certainly atony of the circulation in chlorosis and scurvy, but this atony forms a condition favourable to the development of any irritation whatever; if during this state no cause sur-excites the digestive organs, the phenomena of mucous fever will never manifest themselves.

It is certain that cold and humidity debilitate the skin, at least at first; but it is not less certain that these two atmospheric conditions determine at the same time a sympathetic increase of activity in one or more internal parts: this is proved by the increased lachrymal secretion, by coryza, leucorrhœa, odontalgia, angina, bronchitis, pleurisy, pneumonia, pain in the forehead, the temples, the breasts, the præcordial region, the epigastrium, the loins, the hypogastrium, the testicles, the articulations, and the limbs, occasioned by the humid cold, according to the predisposition of the individual and the other circumstances to which he has been subjected. I have too frequently observed, both in my own person and in others, the stimulating influence of cold and humidity united, to permit me to entertain the slightest doubt upon the subject. This stimulation is most frequently felt in the digestive organs, especially if the patient has been using an improper diet; those organs being the most excitable of all those that form the human body. We cannot, therefore, be surprised that humid cold produces the mucous fever, since the seat of these fevers is the digestive apparatus.

The absence of the solar rays is doubtless one cause of debility; affecting first the skin, then the brain, and in succession the rest of the body; but can this cause alone produce the mucous fever? Want of cleanliness, by diminishing more or less the perspiratory action of the skin, the suppression of the irritations of this tissue, or of those of the articulations, the nerves, and the muscles, predisposes to this fever, only by determining a supplemen-

tory activity in the digestive organs.   If the bath after meals has
ever occasioned the mucous fever, the fact is not a surprising one;
for, to produce this result, it is only necessary that it give rise to
an indigestion.

The privation of food may occasion, if not a mucous fever, pro-
perly so called, at least the principal phenomena which characte-
rize it.   An abstinence of four days during health, from every
thing except water, has assured me of this fact in my own per-
son; but it is not true, that these phenomena are occasioned by
weakness of the stomach. The physicians who have devised this
wild etiology could have had no idea of the painful sensations at
the epigastrium, and the sudden perspiration experienced in these
cases. The tongue is red at its edges and point, and covered with
a thick and white coat in the middle, the thirst is excessive; the
skin burning, and the stomach so little weakened that a spoonful
of wine occasions pains, such as are experienced in a commencing,
though already well characterized gastritis.

To place organic diseases of the abdomen, and especially the
tabes mesenterica, among the causes of mucous fever, cannot but
confuse the reader.   What organic lesions are meant?   Is not
the tabes mesenterica recognised at the present day as a mesen-
teritis, sometimes primitive, much more frequently owing to
chronic enteritis? The bare assertion that the presence of worms
in the digestive organs is one of the causes of this fever, is not
sufficient; the fact requires proof: this neither has been nor can
be given.   All that can be said upon this subject is, that the ir-
ritation which constitutes the mucous fever, is often accompanied
by the presence of these animals in the alimentary canal, but we
are in complete ignorance as to any effect they may have in the
production of this fever: they merit much less attention than has
been bestowed upon them.   In vain has Lepecq pointed out the
following signs of their presence, which, he thinks, should deter-
mine the physician to adopt measures for their expulsion: nau-
sea, syncope, pains pervading the whole body more violent in
the head, and especially in the thighs, when they are rather
gnawing than accompanied with a sense of weight; *morsus ven-
triculi*, colics, flatulence, a transient prominence of the abdo-
men, vertigo, delirium ceasing and returning suddenly, convul-
sions, tremors of the limbs, tremulous motions of the lips, phren-

sy, a desire to bite, variation of the pulse, which is sometimes strong and at other times depressed, small, frequent, unequal, and intermittent. None of the morbid phenomena announce with certainty their existence; unless there are found pieces of the worms, or whole worms; they are seldom seen in the matters vomited, more frequently in the alvine dejections. M. Bremser admits no other certain and infallible sign of their existence.* Even in those cases in which the evacuation of worms has been observed, the symptoms attributed to their action upon the gastro-intestinal mucous membrane very frequently continue, when, on examination, none are found in the alimentary canal. Georget has, with reason, attributed to a lesion (which I must remark is often sympathetic,) of the encephalon, the symptoms which have generally been ascribed to worms.† Brera has judiciously remarked, that the evacuants resorted to for the expulsion of worms, often do not act efficaciously, unless emollients have been previously administered. Pinel deserves great praise for having banished the order of verminous fevers admitted by Selle and many others; but he should not have ranked worms among the causes of the mucous fever, since they themselves are only an effect of the causes which produce this fever.

The assertion has been made in too general a manner, that excessive evacuations debilitate: if they diminish muscular action, they exalt sensibility, unless they are accompanied by too lively a sensation, as in coitus; but even this act is not succeeded by a general debilitation; the brain is rather in an apoplectic than in an asthenic state; the head is heavy and painful; there is a tendency to sleep; or a sense of pain in the stomach, and an irresistible desire for food, which indicates an excitement of the gastric passages, analogous to that produced by long abstinence. The same remarks may be made with regard to repeated watching; profound meditation, and melancholy, which destroy the appetite, only when the brain having become painful, produces a sympathetic irritation of the stomach.

* Traité sur les Vers Intestinaux des Hommes. Paris, 1824, in 8vo.
† De la Physiologie du Systeme Nerveux, Specialment du Cerveau, Recherches sur les Maladies Nerveuses. Paris, 1821, tome 1, p. 420, in 8vo; chez J. B. Balliere.

It is not correct to assert in a general manner that indolence or too active a life debilitates. Indolence weakens only the organs which remain inactive; and the assertion, moreover, is not rigorously true, since repose excites the organs of sense; inordinate exercise determines pain in the muscles and a cerebral sur-excitement, which render repose necessary, rather than debility of these parts.

It may fairly be concluded, from this examination of the causes of the mucous fever, that if some of them have a debilitating influence, yet none have this effect upon the whole economy; that none of them debilitate the digestive organs, and that, on the contrary, all the occasional causes of this fever act by stimulating directly or sympatheticlly the gastro-intestinal mucous membrane. The physiological study, therefore, of these two orders of causes points to gastro-intestinal irritation as the proximate cause of this fever. This is also demonstrated by the unequivocal symptoms, (although they are frequently less apparent than in gastric fever,) of gastro-enteritis, observed in the mucous fever. Finally, on examination after death, traces of inflammation of the gastro-intestinal canal are almost constantly discovered; consequently, the principal phenomena of the mucous fever are generally to be traced to gastro-enteritis.

Rœderer and Wagler have attempted to establish a distinction between the traces of simple mucous fever and those of inflammatory mucous fever; but the result of their observations shows that the difference is only in degree.

It remains to give an account of the mucous symptoms which particularly characterize this fever. These symptoms are the white and thick coating of the tongue, the nauseous taste, the vomiting and dejections of mucous and glairy matters. What do these symptoms indicate? An augmentation of the secretion of the gastro-intestinal mucous membrane. This increase of secretion does not announce an irritation *sui generis,* a specific irritation differing from the irritation without augmented secretion, (at least at the commencement and in the highest stage of the disease,) which constitutes the gastric fever. This increased secretion, which appears from the commencement of the irritation of the gastro-intestinal mucous membrane, which augments and diminishes with it, cannot be the cause of this irritation. The

existence of this irritation is incontestable; irritation cannot co-exist with atony in the same organ; this secretion then is not the result of atony, of relaxation of the gastro-intestinal mucous membrane, but of irritation of this membrane. Should the question be asked why the gastro-enteritis, constituting mucous fever, is accompanied by mucous symptoms, which are not observed in the gastric fever, the answer is easy: the question should not be why; but when and how: now, the experience of all times and all places has proved that an increase of secretion manifests itself, whenever the gastro-enteritis is the result of humid cold, of the use of gross rather than of stimulating food, in certain subjects of soft skins and pale tissues. To this the distinction, which has so little foundation in nature, between inflammation, properly so called, and catarrhal inflammation, or catarrh, reduces itself. Pinel, having admitted the identity of these two morbid states, was inconsistent in attributing the mucous fever to irritation *sui generis*. It may be admitted that the follicles of the gastro-intestinal mucous membrane may feel more sensibly the influence of humid cold, since it suppresses the secretory action of the skin, and the mucous membranes supply the deficient action by an increased secretion. The anatomical researches of Rœderer and Wagler tend to demonstrate this proposition. Perhaps a sufficient distinction is not made in pathology between the follicles and the membrane in which they exist. However cautious we should be, not unnecessarily to multiply the tissues of the body, this distinction appears admissible, although it is likewise certain, that the mucous membrane itself is inflamed in the mucous fever.

Cold and humidity do not affect the gastro-intestinal mucous membrane alone: it is not uncommon to observe coryza and bronchitis preceding the gastro-enteritis, which constitutes the mucous fever. Bronchitis frequently persists during the whole course of the latter; the irritation often propagates itself to the pulmonary parenchyma, or repeats itself in the pleura; a peripneumony, or a pleurisy often misunderstood, then complicates the gastro-enteritis, increasing the danger of the disease, and frequently passing into the chronic state after the cure of the

gastro-intestinal irritation. The latter, also, very frequently be-
comes chronic, and when it extends its influence to the perito-
neum, it determines ascites. Nothing is more common than
to observe the different irritations which give rise to the mu-
cous fever: at length, ceasing to provoke the action of the heart,
and prolonging themselves indefinitely. This result is more
frequently witnessed from the circumstance of these irritations
being ordinarily treated, by a method inappropriate to the na-
ture of the disease.

The greater number of facts which I have been able to col-
lect, since the publication of the first edition of this work, a
more careful consideration of those which I collected in the
army, and a more attentive study of the treatises on epidemics,
have convinced me, that simple bronchitis may occasion most of
the phenomena, the collection of which, constitutes the mucous
fever; that in old men, an acute inflammation, though not of the
most intense character, of the mucous membrane of the bladder,
may produce a similar effect; that an inflammation of the articu-
lations after a forced march, during a wet season, may give rise
to the same symptoms; that, in this case, the inflammation fre-
quently ceases in the joints, and manifests itself in the digestive
organs, or it develops itself in the latter, without ceasing in the
former; that there are many cases in which the small or the great
intestine alone is inflamed, the stomach preserving its normal
condition. It is, however, true, that the mucous fever is gene-
rally a gastro-enteritis: but to be only acquainted with what is
most frequent, and to be ignorant of the exceptions, must ex-
pose the physician to reverses and regrets.

There is not only a gastro-enteritis in mucous fever, when it
is accompanied by taciturn delirium, agitated dreams, vertigo,
somnolence, or obstinate insomnolence, when the disease conti-
nues many weeks, and we observe periodical returns of these
dangerous symptoms, without exacerbation of the gastric and
mucous symptoms. The encephalon is then affected to a cer-
tain degree: this may have been the case from the commencement
of the disease, or even previously, owing to the influence of cer-
tain causes, or it may have arisen during the disease, under the
influence of the gastro-enteritis. In this case, is observed, what

is considered a complication of the *mucous* with the *adynamic* and *ataxic* fevers, or the conversion of the first into one of the latter, or, finally, its transition to the state of *typhus*.

After the remarks which have been made with regard to the powerful action of cold and humidity united, of abstinence and the use of indigestible food, it can easily be conceived, that the mucous fever should show itself epidemically in autumn, at the beginning of winter, and even at the end of the spring, when this season has been somewhat cold and there have been early rains. *It will readily be understood, that the cold and humid atmospheric constitution acts with greater force in low, damp, foggy places, covered with forests: in these places, this fever is found to prevail epidemically, not only during cold and damp seasons, but even when these two atmospheric conditions are by no means marked.

When a very hot summer is succeeded by a damp and uncommonly cold autumn, the influence of the heat being still felt in the secretory apparatus of the bile, at the same time that the cold and humid atmosphere acts upon the digestive organs, there is observed, in many patients, a union of the symptoms of gastro-intestinal irritation with those of the augmentation of the bilious and mucous secretions. When during exposure to the causes which produce the mucous fever, an individual indulges in excesses of the table, making an immoderate use of succulent articles of food, generous wines, and spirituous liquors: this concurrence of symptoms is often observed. Such is the double source from which is derived the bilioso-mucous fever, or the complication of the gastric or bilious with the mucous fever: it is impossible in any other manner to account for the complication of two diseases of the same nature, the seat of which is nearly the same.

The complication of the inflammatory and the mucous fever, is not so chimerical as Pinel imagined: it is observed when the causes of the epidemic prevalence of the latter disease, are so intense as to affect those individuals in whom the circulatory apparatus is possessed of great force, or when to the gastro-interitis, which principally constitutes mucous fever, is added an inflammation, sometimes latent, frequently misunderstood, of the lungs. To the gastric and mucous symptoms there are united

the signs of a high excitation of the heart, together with the phe-
nomena of the thoracic phlegmasia; the cheeks are flushed, the
pulse is full, hard and strong, and the skin very hot.

Treatment of the Mucous Fever.

The inference from the preceding observation, is, that the
diseases which are designated by the name of mucous fever, are
most frequently primitive gastro-enteritis, developed under the
influence of humidity, cold and a bad regimen, and usually af-
fecting subjects, whose mucous membranes are disposed to se-
crete abundant mucosities: that the irritation often involves the
whole extent of the air-passages, and of the digestive organs;
that the gastro-enteritis may be accompanied by an arthritis, a
pleurisy, or a peripneumony, either latent or manifest, by an ir-
ritation of the encephalon, by a high irritation of the heart, or
finally, by a sympathetic irritation of the biliary apparatus.
These circumstances constitute so many shades which it is im-
portant to recognise, as the treatment is not absolutely the same
for all.

The gastro-enteritis, which ordinarily constitutes the mucous
fever, presents, likewise, shades of intensity to which it is im-
portant to pay attention.   Thus, the signs of irritation are well
characterized, unequivocal, with or without diarrhœa, and the
disease proceeds with rapidity; or the phenomena of gastro-en-
teritis are obscure, of slight intensity, to a certain degree ob-
scured by those which announce an abundant secretion of muco-
sity, or a mucous turgescence of the diseased membranes.   All
these shades require a modification of the treatment.

There are, if I mistake not, at least eight varieties of mucous
fever, which the desire of nosological simplification has occa-
sioned to be passed over without observation, which, however,
it would be irrational to treat by a method absolutely the same,
as pyretologists have advised.   Let us, in a few words, pass in
review their opinions with regard to the treatment of this fever.

Servile imitators of their predecessors, Selle, Stoll, and J. P.
Frank, have only had in view the expulsion of the glutinous mu-
cous or pituitous matter, to which they attributed the disease.
"The first indication," says Selle, "is the evacuation of the
phlegm which covers the internal surface of the intestines."

"We must," says Stoll, "open the obstructions, resolve the thickened humours, and evacuate them by the aid of salines, incisives, and resolvents, by a mild emetic given from time to time with copious draughts of water, by emetics in alterative doses, by purgatives administered in a similar manner, and afterwards by bitters and tonics." Of what consequence is it that they recommend not to heat too much, to be reserved in the use of active stimulants, and that they say that this case is one in which we should be cautious of proceeding with haste? It is evident that these physicians have been guided in their practice by a false theory, and not by experience, as they so frequently assert. Baglivi himself, while he advised emollients and even venesection, had admitted the necessity of having recourse, in certain cases, to mild purgatives from the commencement, when there were in the digestive passages matters in fermentation: these remedies were to be succeeded by stomachics. J. P. Frank has only copied F. Stoll and Selle, rejecting their theory while he adheres to the practice founded upon it. Although he has recognised irritation of the gastro-intestinal mucous membrane in the mucous fever, he still advises an emetic at the commencement, to remedy the atony of the stomach, the nausea and vomiting; he prefers ipecacuanha, either, he says, as an evacuant or to communicate a slight astriction to the alimentary canals and to remedy the relaxation, which appears inseparable from the affection, (that is to say, the irritation, even according to this professor,) of the mucous membrane. * He advises the repetition of the latter remedy, and recommends its administration in a mild aromatic infusion; he advises, likewise, the frequent exhibition, in small doses, of a mixture of rhubarb with super-tartrate of potash or hydro-chlorate of ammonia; or, after the example of Rœderer and Wagler, three or four grains of the resin of jalap in an emulsion; finally, to remove every obstacle to the course of nature, that is to say, to prevent the delay of irritating matter in the bowels and to guard against the too debilitating effect of evacuants, he advises to commence with an emetic, and afterwards, to employ mild laxatives, emollients and tonics. It is evident that Pinel was contented to adopt, upon

* Nos. Phil. tome 1, p. 121.

the authority of Rœderer and Wagler, opinions which he should have submitted to the test of experience, is it not surprising that in the treatment of mucous fever he has not spoken of the advantages of the expectant method?

If it be true that every increase of secretion is the index of an augmentation of the vital movement of the part in which it occurs, and if the augmentation of the secretory action of the gastro-intestinal mucous membrane be the special characteristic of the mucous fever, does it not involve an inconsistency, to solicit this secretion, to excite it by the employment of evacuants? How mild soever may be the emetics and cathartics, it is necessary, to produce the desired evacuation, that they irritate a membrane already in a state of irritation, and thus the remedy adds to the action of the morbific cause.   Admitting that evacuants are proper, is it not in conformity with the most generally received opinions that emetics and cathartics leave after them, not debility, but a certain degree of irritation? What good purpose then can be subserved by their alternation with tonics, or rather is it not absurd and even dangerous to *open* and *shut* alternately the *strainers* of the gastro-intestinal mucus? The more we reflect upon this subject, and the more frequently we have an opportunity of seeing the mucous fever treated by evacuants and tonics combined, the more we shall be convinced that if this disease generally prolongs itself for several weeks, if it be accompanied in most cases with exacerbations of great intensity, and, finally, if it terminates frequently in death, it is because this mode of treatment increases the irritation which constitutes it.

If evacuants sometimes hasten the termination of irritation in gastric fever; if in a small number of cases they may be necessary to expel the bile, the presence of which might irritate the intestines, evacuants can only have the effect of reproducing the secretory irritation, which constitutes the mucous fever, especially when it amounts to a well characterized degree of inflammation.   Nothing authorizes the opinion that gastro-intestinal mucosities ever irritate the membrane which secretes them. We may admit that the bile poured by the irritated liver into the intestines sometimes irritates them; but mucus, the product of the gastric membrane, should no more irritate this membrane than the nasal mucus irritates the pituitary membrane in coryza.

To diminish the gastro-intestinal irritation, to solicit the action of the skin, to employ derivatives which act upon this tissue, and, when the encephalon or the lungs are affected to an alarming degree, to resort to venesection if the circulation be greatly accelerated: such are the indications in mucous fever.

When the signs of gastro-intestinal irritation are well marked, we must resort to the means which have been pointed out in the treatment of gastric fever, with the exception of very slight modifications.

Whatever be the intensity of the mucous symptoms, we must prescribe diet, warm drinks, acidulated and edulcorated, rather than mucilaginous drinks, acidulated lavements and emollient fomentations to the abdomen.

Whenever the irritation is intense, we must have recourse to leeches, but in general we should not apply a great number: 1st, because the subject is not generally plethoric; 2dly, because it is often necessary to repeat the depletion on account of the frequent exacerbations of irritation; 3dly, because gastro-enteritis with mucous turgescence or with an abundant secretion of mucosities, is less intense than that which manifests itself by signs of gastric fever without mucous symptoms: 4thly, because experience demonstrates that in mucous fever, the sudden termination of the irritation is seldom obtained by a considerable loss of blood.

When gastric irritation occasions only phenomena of little prominence, and does not determine any considerable acceleration of the circulatory movement, we must not on this account conclude that it does not exist, but only that it is slight, that irritation of the encephalon is sometimes associated with it, or that in this particular case, the sympathies are not easily brought into play.

When, under the influence of diet, of the drinks which I have pointed out, or even very hot, aqueous drinks, rendered slightly aromatic by the addition of elder flowers, orange leaves, or any similar vegetable product, the gastric irritation is observed to diminish, its secretion to cease, and a favourable sur-excitation of the skin to manifest itself, this derivation must be kept up by the transient application of rubefacients to the latter tissue. But their action should be watched, for they increase the gastric irritation when they do not remove it; the part whichh iws

they have been in contact must then be covered with emollient
cataplasms.

We often obtain the cure of the disease by these very simple
means, and without having recourse to the abstraction of blood.
Nevertheless, Sarcone assures us that in the epidemic rheumatic
fever of Naples, blood-letting, fearlessly and promptly practised
during the violence of the paroxysm, and repeated with prudence
on the second and third attack, was the first and most certain of
all the remedies; that those of his brethren who confined them-
selves to the prescription of whey and water, saw their patients
recover very slowly, and observed the disease sometimes termi-
nating in arthritis or rheumatism. He kept the bowels open
with a solution of a few drams of neutral salts, with a decoction
of barley, of mallows, with whey and emollient lavements. "It
cannot be expressed," he remarks, "how very useful was the ab-
straction of blood at the proper period; nor can we explain," says
he, "the inutility of every other remedy when this measure was
omitted."

After having reported the autopsic examination of an indi-
vidual who had fallen a victim to a malignant, inflammatory and
petechial mucous fever, Rœderer says that the employment of a
resolvent and emollient antiphlogistic method would probably
have saved this patient as readily as it had done many others at-
tacked with disease nearly the same. Hitherto it has been thought
that a salutary derivation might be caused by an emetic, which
does in reality sometimes produce happy effects.

But since less dangerous means may succeed, why not prefer
the latter? It is true that during the operation of an emetic, the
skin becomes hot and red, and is covered with perspiration: it is
only in this manner that this remedy can prove useful; but it
actively irritates the stomach. If it sometimes causes the disap-
pearance of the mucous symptoms, it increases the intensity of
the symptoms proper to irritation, which afterwards, pursues a
more rapid course, and is attended with more danger to the pa-
tient; or it persists for a longer time than it would have done,
had the disturbing treatment not been resorted to. I do not
dispute the small number of cases in which an almost sudden
cure has followed the employment of an emetic; but it may be
asked were these in reality cases of mucous fevers, occasioned

by a constitutional predisposition and powerful occasional causes.

When, after having applied leeches to the epigastrium, the tongue becomes mucous and white at its edges, and at its point, if it becomes more and more loaded, if there remains a sense, of weight without any thirst or appetite, the pulse having re- sumed its natural standard, an emetic may be given with advan- tage; but we never can be certain, even in this case, that there will not be a renewal of all the phlegmasial phenomena.

When mucous fevers are the result of idiosycrasy acted upon by powerful epidemic or endemic causes, it often happens that the most appropriate treatment abridges but slightly its course; it, however, obviates danger. When these diseases are prolonged, it is difficult and sometimes even prejudicial to restrict the pa- tient to an absolute diet: we may allow him gruel made with bread, rice, or barley, together with acid fruits, cooked and sweetened with sugar.

In the case of diarrhœa, and still more of dysentery, the most severe diet must be insisted upon; hot mucilaginous drinks must be administered; the temperature of the skin must be con- stantly elevated by the application of heated cloths; very hot emollient fomentations, and cataplasms almost burning applied to the abdomen; eight or ten leeches must be applied to this region, or to the anus, and this measure must be repeated as often as the intensity of the symptoms requires it and the strength of the pa- tient permits.

The inflammation of the mucous membrane of the larynx is advantageously combatted, as well as that of the bronchia, by the inspiration of water in the state of vapour; the application of a few leeches to the sternum or to the neck is sometimes indi- cated. When the pleura, and particularly when the lungs are me- naced, we must not hesitate to bleed from the arm; the abstrac- tion of eight or ten ounces of blood will be sufficient, at least in the greater number of cases. Without losing sight of the gastro- intestinal irritation, we must combat the thoracic phlegmasia as though it were simple, paying regard to the idyosyncrasy of the subject and the causes which have acted upon him.

It may happen that, in the course of the mucous fever, pros- tration may supervene, the patient fall into a state of hebetude,

and debility pervade the whole economy. In this case, the disease having become more intense, dangerously assaults the cerebral functions, assumes the name of adynamic fever, and should be treated in the manner I shall indicate when describing the treatment of this fever.

When agitating dreams, delirium and convulsive movements, alternating with debility, announce that the encephalon participates in the irritation, we must resort to the means which shall be pointed out in the chapter on ataxic fever.

In the great public calamities, which determine the appearance and propagation of typhus fever, the mucous fever often constitutes the first degree of the epidemic.

CHAPTER V.

Of the Adynamic Fever.

THE adynamic fever is the creation of modern times; it does not exactly represent, as has been asserted, the putrid fever of the ancients. They attributed many diseases, and especially a great number of fevers, to the putridity of the blood and the humours; but at least they never entertained the thought of making the signs of the putridity, a particular fever; doubtless because they never thought of isolating them from all the symptoms which preceded and accompanied them. What the ancients did not do with regard to putridity, certain moderns have not hesitated to do with regard to adynamy, and their opinion still influences the minds of many physicians. Before the period, at which it was attacked by M. Broussais, good observers had declared the non-existence of simple adynamic fever; but this ray of light was not turned to advantage; indeed, it could not be, since the seat and nature of inflammatory, gastric, bilious and mucous fevers were entirely unknown: it is easy, at the present day, to decide this important question.

Selle, more remarkable for erudition than for his powers of observation, admitted simple mucous fevers, contrary to the opinion of his predecessors—It was his classification alone which led him into this error. If we refer to the work of Stoll, we shall no where find an account of the adynamic fever of Pinel: he only describes, under the name of putrid fever, all the unfavourable symptoms that show themselves during the highest degree of fevers. Cullen did not admit a species under the denomination of *putrid fever*, although he thought putridity might complicate fevers.

J. P. Frank, unites, under the title of nervous fever, all fevers accompanied by symptoms of prostration or of disorder of the nervous system.   Pinel was the first who established an order of fevers presenting the following symptoms; viz. debility, languor, a prostration of vital force, pulse feeble and with slight acceleration, stupor, vertigo, and as it were a state of intoxication, impaired sight and hearing, a sort of annihilation of the mental powers, slight delirium, stammering or difficulty of articulation, involuntary passage of the fæces and urine, &c. Farther on, he gives, in the following terms, a general and complete description of the symptoms of adynamic fever:

Livid colour and general debility, tongue covered with a greenish-yellow, brown, blackish, or even a black coating; at first moist, and afterwards dry and even parched; a fuliginous state of the gums and teeth, fetid breath, variable thirst, deglutition impossible, or, as it were, paralytic; sometimes a vomiting of various matters, more or less deep in colour, constipation or diarrhœa, frequently involuntary dejections, black and fetid; in some cases meteorism; pulse small, soft, slow or frequent, often hard, apparently developed during the first days, but passing suddenly to the opposite state; sometimes from the commencement a momentary appearance of congestion of the head or chest; in some cases passive hemorrhage from the nose, the bronchia, the stomach, the intestines and the genital organs; petechiæ, vibices, ecchymoses, respiration natural, or accelerated, or slow; heat acrid to the touch, increased or diminished; dryness of the skin, or partial, cold, clammy or even fetid sweat; urine retained, passed with difficulty, or escaping involuntarily, of a citron or deep colour during the first stages, and towards the termination, turbid, with a grayish sediment; eyes red or of a yellowish green colour; rheumy, tearful and squinting, the aspect dull, impaired hearing, sight, taste and smell; frequent deprivation of the last two mentioned senses; dull headache, state of stupor, somnolence, vertigo, frightful dreams, or taciturn delirium, slow and hesitating answers, indifference on the part of the patient to his own condition; prostration; effacement of the features and of the muscular prominences in general; supine position; sometimes suppuration of the parotid glands, followed or met by a diminution of the symptoms; icterus; impossibility of stimulating

the skin and of exciting the organism, gangrene of wounds and in general of the parts upon which the patient has lain.*

Admitting, for a moment, the truth of this description, and supposing that each of the symptoms occupies its proper place, and that they are observed to occur as they have been enumerated, it is proper to subject them to a physiological analysis, with the view of discovering whether there is not a mistake with regard to the importance attributed to them; in a word, whether they are to be referred to adynamy.

The *livid colour* and general *sinking*, are not symptoms peculiar to debility; in all acute diseases, there is more or less prostration, and frequently the colour of the skin is livid, even in inflammation of the greatest intensity; for example, in peritonitis.

What reason is there for supposing that a yellowish-green, brownish, blackish or even black coating of the tongue is a sign of weakness rather than a white or a yellow covering. When this coat, from yellow, turns to green, can so slight a change authorize the supposition that the patient has passed from excess of force to excess of debility?—The *dryness* and *aridity* of the tongue, and the fuliginous state of the gums and teeth, evidently indicate that the mucous membrane of the intestines is in a similar state of dryness, in consequence of the suppression of its secretory action. If this suspension be the effect of weakness, we must attribute to the same cause the dryness of the mouth and tongue, observed after rapid running, in intense angina, in gastritis resulting from the use of wine, from spirituous liquors, or irritating poisons. As to variable thirst, such an indication is so vague, that it is useless to dwell upon it. The impossibility of deglutition, certainly announces a want of action in the muscles charged with this office; but this disability is observed in apoplexy; a disease which has not yet been classed with general diseases caused by weakness. Besides, the weakness of some muscles does not demonstrate that the whole organism is debilitated; it only proves that the nervous system no longer provokes the action of these particular muscles.

The remarks that have been made with regard to *variable*

* Nosogr. Phil. tome 1, p. 173.

thirst, may be applied to the vomiting of VARIABLE MATTERS; and what has been said with regard to the covering of the tongue and teeth is equally applicable to the vomiting of *matters more or less deep in colour.*

Constipation cannot be classed among the signs of debility, except in cases of the most unequivocal character, in paralysis of the inferior extremities and in compression of the brain and spinal marrow: now, it has not been proved, nor has the attempt been made to prove, that this paralysis occurs in adynamic fever. Constipation generally announces a slight irritation of the intestinal canal, sometimes a violent inflammation, involving all the coats of the intestines, frequently an inflammation of their serous coat: in many cases there is an absence of local matters in the canal, and perfect integrity of its mucous membrane: it never indicates astheny of these organs, except in the cases which have just been pointed out, and which cannot occur unless in the last scene of fatal adynamic fever. It is somewhat extraordinary that after having ranked constipation among the number of the symptoms of adynamic fever, these authors have assigned the same place to diarrhœa: it is certain that the latter symptom is never referrible to weakness; it is always the effect of a cerebral affection, such as fear, which precipitates the contraction of the muscular coat of the intestines, or of an irritation of the mucous membrane of the intestines, caused, 1st, directly, by the presence of food imperfectly digested, or of any other irritating substances; 2dly, sympathetically by gastritis, by the sudden suppression of the cuticular transpiration, or the sudden cessation of a sur-excitation of any other part of the system. If involuntary dejections announce debility of the sphincters, they prove energy of the contractions of the muscular coat of the intestines, unless when, in the state immediately preceding death, the fecal matters escape in consequence of the development of gas in the intestines, and the hurried movements of the diaphragm.

Fetor of the fecal matters is not a sign of putridity; nothing can possess this property in a higher degree than the excrements of individuals addicted to excesses of the table: after an indigestion caused by a copious repast, there is often a diarrhœa of matters excessively fetid, although the individual was very well at the time of the meal, and partook of stimulants of every kind.

It is unnecessary to discuss the black colour of the fecal dis-
charges: Pinel, however, paid great attention, for whatever reason,
to this circumstance. Does not this prove, that even men of the
most enlightened intellects have a disposition to assign the first
place to those peculiar circumstances that most strongly address
their senses?

It is something surprising, that *meteorism* of the abdomen
should be classed among the symptoms indicating weakness. Is
it not a symptom of peritonitis, of strangulation, of some obstruc-
tion of the intestinal canal, of an excessive development of gas
in the intestines, or in the cavity of the peritoneum? Now, in
what manner can debility occasion, I do not say the dilatation
which is the mechanical effect of the presence of the gas, but the
production of this gas? This is what requires explanation. There
is, perhaps, no colic or cardialgia without swelling of the sto-
mach and intestines, and without flatulence. I am aware, that
it is common to attribute flatulence to a weakness of the tissues
of the cavity in which it occurs; but this is pure hypothesis:
consequently, we see stimulants of every kind administered in
vain with the view of obviating this symptom, which naturally
disappears with the irritation.

The smallness, *concentration*, and *slowness*, of the pulse, do
not announce a general debility, since the variations of the pulse
only indicate the variations of the action of the heart, which may
be languid while the other organs are violently excited. It is
thus that the pulse is small in inflammation of the peritoneum,
slow in that of the encephalon, while no one thinks of attribut-
ing these diseases to weakness. Every intense irritation accele-
rates the pulse, and renders it stronger and more frequent; every
violent irritation renders it obscure, weak, and concentrated.
The *softness* of the pulse cannot be given as a sign of essential
debility, since it is frequently observed in peripneumony, and
in this case disappears after bleeding, and is succeeded by force
and fulness. Pinel asserts, that, in adynamic fever, the pulse is
also found *frequent, often hard, and apparently developed,*
during the first days. Now, the pulse cannot be developed
only in appearance; it must either possess this character, or not
possess it: if it be developed, it announces sur-activity, and by no
means general weakness; and this is more especially true when

it is frequent and hard; for the union of these three characters, constitutes the most unequivocal sign of an irritation in some point of the organism. Consequently, the existence of weakness, of *adynamy*, during the whole course of the adynamic fever, cannot be maintained.

Unless it be imagined that the nature of this disease may be different in its different periods, it must be admitted that there are many cases of adynamic fever, which, at least during the first days, are not owing to adynamy. Those who assert the transition, should point out the period of its occurrence, and not throw together in confusion the two orders of symptoms which characterize the two epochs of this disease. This they have not done, nor is it practicable. It is true, that they have said, that the adynamic fever sometimes succeeds the inflammatory fever, inflammations, the bilious and gastric and frequently the mucous fever; but, certainly, as long as an inflammatory fever continues, it must, of necessity, be inflammatory.

Should not the slowness and softness of the pulse be attributed to *congestion in the head or in the chest*, which is sometimes observed from the *commencement* of the disease? What can be meant by the momentary appearance of a congestion? By what fatality does it happen, that the evident symptoms of irritation have been depreciated, for the sake of exalting those which seem to announce weakness in a less equivocal manner. I have heard it asserted by a practitioner, well known in the capital, that, on the first glance, there was a considerable resemblance between the state of a patient, affected with adynamic fever, and one suffering under acute pneumonia. He was at a loss to explain this phenomenon, although in reality the disease was the same in both cases; for the remark was made during the prevalence of an epidemic pneumonia, the seat and nature of which he had almost constantly mistaken.

It is easily asserted, that the hemorrhages which supervene during adynamic fever, are passive: it is more difficult to prove it. They are no more passive than all other hemorrhages. We must distinguish between those which occur in the commencement, and during the course of adynamic fever, from those which occur immediately before the fatal termination. Those which occur in the commencement are constantly and evidently

active. In answer to the denial of this assertion, I shall only say:
you either have not observed, or you have observed but badly.
The hemorrhages which occur in the course of adynamic fevers
are likewise accompanied by the local signs which characterize
active hemorrhagy; that is to say, the tissue from which the
blood flows, is hot, tense, and swelled, although the pulse is
small, and even the skin cold in every other part of the body.
This is a verity which cannot be disputed. It remains then to
determine what is the nature of the hemorrhages without signs
of local excitement, which, it is said, have been observed in ady-
namic fever. Now, these cases take place only at the termina-
tion of the disease, since it is conceded by all respectable ob-
servers, that those of other periods are active. Even those of
the termination of adynamic fever are rarely without signs of
excitement in the part which furnishes the blood: were it per-
mitted, in treating of the laws of organic action, to lay down
rules without exceptions, I would assert that these signs are al-
ways present, even in the last agony.

The parts from which the blood flows in their hemorrhages,
are principally the nose, mouth, and anus: had the physicians,
who assert the passive nature of these hemorrhages, taken the
trouble of examining these different parts during their continu-
ance, if, instead of taking a superficial glance, they had applied
the finger to the part, they would have been convinced, that the
mucous membrane of the nose, mouth, and anus, were red and
hot, not only a short time before death, and at the moment of
death, but also for some time after death. If they had seen, as
I have, the blood flow from the bites of the leeches on the epi-
gastrium, for some minutes after death, in a patient whose abdo-
minal region alone retained its heat, during the course of an ady-
namic fever, attended with obstinate coldness of the extremities,
they would have come to the conclusion that there is nothing
more uncommon than passive hemorrhage, that is, a flow of
blood which is not determined by an agent of impulsion, result-
ing only from weakness of the vascular parietes, or, if the ex-
pression be preferred, of the pores or exhalent mouths of the tis-
sues. I have observed, in scorbutic patients, all the symptoms
of the highest degree of adynamic fever: I have seen them pass,
almost continually, black blood by the anus, during the last days

of their lives; this blood was quite as hot as that of a man in health, but probably it cooled more readily. I ascertained that the mucous membrane of the rectum was hot and painful, a few moments before death, and on opening the body I found it of a bright red in many points, and in others gangrenous.

The bluish *ecchymoses* and *petechiæ* should be attributed to debility of the vessels of the skin, since this tissue is really in a state of astheny, during the last period of adynamic fever. This is not the case with regard to the small red points, that are developed on the skin, either in the commencement, or during the course of the disease; when this tissue, hot and acrid to the touch, partakes of the internal irritation. It would be absurd, to attribute this pungent heat, and the hurried respiration to debility.

The *coldness* of the skin positively announces that it is in a state of astheny: but it is by no means a sign of general essential weakness, since every thing, on the contrary, demonstrates that when the periphery of the body is cold, the action of the internal organs is increased, until the impression of the sedative cause, which acts upon the skin, communicates itself through the medium of the nervous system to the viscera, which execute the principal vital actions. Besides, there is only coldness of the extremities in adynamic fever: even at the termination of the disease, the abdomen is hotter than during health. Had more attention been bestowed upon the examination of this region, the science of disease would have advanced with greater rapidity.

Cold, partial, clammy, and even *fetid sweat* does not indicate debility, when it is observed on a hot and acrid skin: it indicates only a local weakness, when it occurs on a cold, pale surface: in this case, it likewise announces a feeble reaction of the tissue. In general, the skin is not cold, in a partial sweat, until it has continued for some time.

Retention of urine occurs in adynamic fever, as it sometimes does during profound sleep, in certain persons in good health: this is not a sign of general weakness, nor even of weakness of the muscular coat of the bladder, but results from a suspension of the nervous action upon this coat. It is likewise a more rare occurrence than is thought: it must not be confounded with the

suppression of urine, resulting from irritation of the kidney, which is more common in adynamic fever. The involuntary discharge of urine only announces a want of resistance on the part of the sphincter. The grayish sediment is not a sign of much importance: it is sometimes observed in adynamic fever; it is also observed in acute diseases, evidently inflammatory.

The *increased flow of tears* and the *redness* of the conjunctiva, rather indicate irritation, than astheny; as to the greenish yellow colour of this membrane, it is not a symptom peculiar to adynamic fever. The *dull aspect*, *impaired sensation*, the *stupor*, *somnolence*, *wild dreams*, the *slow answers*, and the *indifference* of the patient, are owing to diminished cerebral action, but this does not necessarily prove that the organ is radically weakened, since the above symptoms may arise from cerebral congestion, or an apoplectic state: this is an important distinction, since it alone can furnish a sure basis for our remedial measures. Besides, were these symptoms the result of real astheny of the brain, they still would not prove that the whole organism was involved in the debility. There may be, and there often is, irritation of another organ which deserves no less attention than the encephalon; an irritation of which the apparent cerebral astheny is generally the effect.

The *contortion* of the eyes, the *delirium*, and *vertigo* are not symptoms of the adynamic fever only; since they are classed with those of ataxic fever. I shall, therefore, not discuss them until the latter fever be treated of.

Icterus cannot be attributed to weakness, nor can the suppuration of the parotids, of which we shall again speak.

The *prostration*, the debility of the muscular system, the weakness and slowness of the muscular contractions, are the most common of all symptoms: they are observed in almost every disease, in the acute, as well as in the chronic; in inflammatory diseases, as well as in those which are not considered of this character. Whenever an intense pain is felt, these symptoms manifest themselves; they accompany coryza, as well as pneumonia and peritonitis. In a word, whenever the vital part is threatened in any part of the economy, muscular action is diminished: this is not astonishing, since the integrity of the muscular function is not then necessary to the conservation of life.

Nature, whose powers and good intentions have been too highly extolled, does not always adopt the best measures for the conservation of the individual. The fear, which danger inspires, destroys the power of flying. If the fear of danger, if a sensation, not of a very violent character, and, especially, an inflammation of an organ, be sufficient to suspend muscular action, is it rational to attribute prostration to general debility, or even always to a debility of the brain? During a painful operation, fainting is not an uncommon occurrence: shall it be said, that this is in consequence of diminished sensibility. Besides, admitting that prostration is always an effect of cerebral astheny, it would be necessary to prove that in adynamic fever, this astheny is primitive: that it is only a part of the general astheny; in which, it is asserted, this fever consists. Now, how can it be asserted, that astheny of the brain is primitive, when we see it preceded by the signs of excitement in this organ, or some other, or accompanied by the symptoms of local irritation in some organ? If the state of the muscular apparatus furnished a certain criterion of the nature of diseases, they should be classified according to the modifications presented by this apparatus in each of them, instead of this modification being made the distinctive character of but a single species of fever. It cannot be said, that the state of this system, is the faithful index of vital force, or it would follow that this force was more powerful in Milo of Crotona, than in Voltaire. Good observers of every age, have remarked, that men, endowed with great muscular strength, succumb in acute disease, more easily than many others, apparently more feeble. If the nature and seat of a disease could be determined, from the prominence of some particular symptoms, there would be no reason why each physician should not choose, among the symptoms of a disease, those which are referrible to some particular organ, to some particular morbid condition, and, upon this foundation, build a system, and attribute all the phenomena of disease to a particular organ, or to the organism in its totality. We must, on the contrary, endeavour to determine the part which each organ takes in every species of disease, and discover the morbid modification which it undergoes.

The *supine position* being the consequence of prostration,

and being observed, like the latter, in manifest inflammation of the pleura and peritoneum, and in many other diseases, the remarks which have been made with regard to prostration are perfectly applicable to this symptom.

The impossibility of producing a rubefacient effect upon the skin is also one of the symptoms of the last scene of violent diseases, which indicate a profound concentration, generally irremediable in the viscera, much more than astheny of the brain; for there is no absolute necessity of the concurrence of this organ, to enable the skin to become red under the influence of stimulants, since all that is necessary for the stimulation of this tissue, is an afflux of the blood of the capillary vessels in the vicinity of the point upon which they act. So that when the skin can no longer be excited, it is owing to the complete annihilation, or at least suspension, of the circulatory action upon the surface; a circumstance which does not always prove that it is not augmented in the interior. It is not uncommon to see the vital action transiently lighted up on the surface, by the internal administration of the mildest tonics, even when vesicatory applications have been used without any effect.

The *gangrene* of wounds is certainly the result of a local slowness of the circulatory action; but it remains to be determined whether, in adynamic fever, this slowness be the consequence of a primitive astheny of the circulatory system, or of an inflammation which destroys the activity of the system. Gangrene of the parts of the body upon which the patient lies, never occurs except after an inflammation of the same parts, resulting from compression.

From this cursory examination of the symptoms of adynamic fever, the following conclusions may be drawn.

1st, That the principal symptoms of adynamic fever announce an increase of force and not weakness: 2dly, that the black colour and fetor of the excrements indicate, not weakness, but inflammation; 3dly, that the symptoms, such as prostration, debility, malaise, obtuse state of sensation and intellect, announcing a real diminution of cerebral action, may nevertheless depend upon an irritation of this organ, or of some other organ; 4thly, that weakness of pulse and coldness of the extremities, indicating weakness of the heart, does not prove that all the organs are de-

bilitated; 5thly, that the symptoms of debility, few in number,
which are observed in adynamic fever, are not observed, except
at the highest degree of the disease, at its decline, and especially
near the fatal termination.   It certainly is not in the phenome-
na of the last agony, that is, in the last effort of vital action, that
we should study the nature of disease: by adopting such a course
we should attribute them all to debility; nor is it in the transi-
tion from a state of disease to that of convalescence, for, in this
case, there are signs of weakness even after the best characte-
rized phlegmasiæ; 6thly, finally, the attentive observer perceives
that in adynamic fever the action of certain organs only is se-
condarily depressed, while the action of many others is, on the
contrary, primitively exalted.   The attempt should then be
made to ascertain whether the sur-activity of the latter depends
upon the weakness of the former, or whether the weakness of
one set of organs be not the consequence of the exalted action of
the other.   Instead of making this important investigation, the
apparent or real signs of weakness have alone been regarded;
and it has been laid down as a principle, that the disease is es-
sentially adynamic.   To arrive at this conclusion, founded upon
so slight a basis, it is sufficient to substitute for the term astheny,
employed by Brown, that of adynamy, which does not yet oc-
cupy a very prominent place in pathology.

Shall it be said, that if the symptoms of adynamic fever, con-
sidered separately, do not prove that it depends alone on weak-
ness, their union leaves no doubt upon the subject.   Such an as-
sertion certainly does not exhibit the appearance of a serious
argument.   In the science of observation, is it then a fact that
two negatives make an affirmative?   To collect the symptoms of
local irritation, couple them with certain local symptoms of as-
theny, and then pretend that this is the description of a disease of
general debility, is evidently to pervert facts, and to forge a the-
ory, devoid of consistency, because founded upon a false basis.

Considered, then, in the symptoms which characterize it, the
disease called by Pinel *adynamic fever*, is not essentially the
consequence of depression of vital force.

Let us now consider the action upon the organism of the
causes of this fever, to discover whether there can be found in
it, any thing that favours the opinion which we are combatting.
These causes are the following:

A residence in low and damp places, in prisons, hospitals, camps, in the neighbourhood of slaughter-houses, in dissecting-rooms and in confined apartments, the air of which is not renewed or is vitiated by emanations from matters in a state of putrefaction, or by the crowding together of many individuals, sick or in health, and especially when they are affected with adynamic and ataxic fever, with gangrene, &c.; exposure to marsh effluvia, especially during sleep, want of cleanliness; food composed of articles tending to putrefaction, putrid water, the abuse of aromatic, alkaline, and mercurial medicines; excessive evacuations, debauches, the absorption of pus, extreme fatigue, or extreme inaction, prolonged watching and study, habitual depressing moral affections, too debilitating a treatment of the fevers called *inflammatory, bilious, mucous,* &c.

If diminution of vital energy essentially constituted adynamic fever, all its causes would act by weakening the organism; yet among the causes are found, residence in prisons and camps, inaction, and depressing moral affections, causes already classed among those of gastric fever, which, according to Pinel, depends upon irritation; we found a residence in marshy places, in cold and damp countries, want of cleanliness, the use of damaged provisions and of bad water, the abuse of venery, prolonged watching and study, on a former occasion, enumerated amongst the causes of the mucous fever, which, according to the same author, likewise depend upon an irritation, have the same causes, they debilitate at one time, and at another irritate. We should at least be told under what circumstances this may occur. Pinel, it is true, admits a singular mixture of strength and weakness in the mucous fever: but still this is not what constitutes adynamy; for, according to him, there is an adynamic mucous fever.

Humid cold does not weaken the whole organism: when it is of little intensity and the circulation is very active, the subject can very well resist the influence of cold and the humidity. If the skin becomes cold, it soon regains its warmth. The asthenic action of cold and humidity upon the skin is the indirect cause of an increased action of the heart: this is evinced by daily observation. But when cold and humidity act permanently, all the organs near the surface fall into a state of langour, which state readily occurs in a subject whose circulation is feeble; but

the debility is only external.   If this union of cold and dampness
acts strongly, the action of the heart becomes exalted, the circula-
tion is accelerated, the lungs redouble their action, the mucous
membranes become irritated, in one or more points, or almost
throughout their whole extent: the encephalon participates in this
condition, but it experiences in a higher degree than any of the
other viscera, the transient sedative effect of the cold transmitted
to it by the nerves: in this case are seen the best characterized
signs of the mucous fever.   If the subject was previously in a
languid condition, the symptoms of the irritation of the mucous
membranes and heart are obscure, scarcely appreciable.   Should
this irritation cease, or even should its symptoms diminish
promptly, the phenomena of languor in the organs placed direct-
ly under the influence of the brain becomes more prominent, and
the mucous fever assumes the name of *adynamic mucous fever*,
because it is supposed that general weakness has supervened upon
the irritation specially fixed in the gastro-intestinal mucous mem-
brane, or has been substituted for it; consequently, adynamy, in
this case, is not the direct effect of cold and humidity.   To have
observed in the hospital the numerous victims of the German
wars is sufficient to produce the conviction that these causes never
directly produce adynamy.

Can the deleterious effluvia emanating from the bodies of per-
sons crowded together in confined apartments, and especially,
from patients under these circumstances, and from animal and
vegetable matters in a state of putrefaction, directly occasion
weakness, and particularly general weakness?

These emanations, in the first place, act only on the skin and
the mucous membrane of the respiratory or digestive passages;
their influence, therefore, of whatever nature, should be at first
confined to some of these parts; it is, consequently, always pri-
mitively local.   We must distinguish between those emana-
tions which affect the sense of smell, and those which do not
affect it: the former sensibly irritate the conjunctiva, the na-
sal membrane, those of the throat, the pharynx and larynx;
they provoke tears, sneezing, a sensation of pricking in the
throat and cough: who can assert that these emanations weaken
the vital action of those parts! Now, if they irritate these, are
we not authorized to conclude, in the actual state of science,

that they equally irritate the other parts, which, possessed of less excitability, or rather, less intimately connected with the brain, do not transmit to it the impressions made upon them by these emanations. As to inodorous emanations, they are so, because they are less abundant, less compact, if we may use the expression, or, because they are really devoid of the power of exciting sensations in the parts of the organism, with which they are in contact. If we judge of their action by that of those which affect the smell, if we consider that they occasion the same diseases as the latter, and the same organic changes, we shall conclude that every deleterious emanation acts primarily by irritating the tissue which receives it.

Yet, as it behooves us to guard against the seductions of analogy, we must call to mind the cases in which the vital action ceases suddenly or nearly so, under the influence of the emanations of which we are treating. What takes place on these occasions? To this question we can give no answer. We need not here inquire whether the deadly cause acts by irritating or by debilitating; that it has acted, is all we either know, or can know. Post mortem examination alone furnishes some light—the traces of cerebral congestion are generally detected. This case, which is but little known, has no direct relation to the adynamic fever, in which we never witness so suddenly a fatal termination.

When this fever arises under the influence of deleterious emanations, symptoms of gastric, bronchial, or gastro-bronchial irritation generally precede or accompany the symptoms of prostration: the cases in which the latter manifest themselves primitively, are so uncommon, that it is with difficulty that a few examples of this kind have been collected, the paucity of which tends to disprove the opinions of the authors who have reported them. When symptoms of prostration show themselves in the first place, those of gastro-enteritis do not fail to manifest themselves in a short time. When gastro-enteritis, with or without bilious symptoms, appears first, gastric fevers take the name of gastro-adynamic, or simply that of adynamic, when the symptoms of gastro-enteritis cease or are but slightly perceived.

Deleterious emanations, then, do not determine the adynamic fever, except by irritating the gastro-intestinal mucous membrane or the bronchial mucous membrane, or both together. It

may be admitted that many of them commence by debilitating the surface with which they are in contact, after the manner of cold; but it must be recognised that this debilitation is followed by an irritation, more or less intense, of the digestive passages or of the bronchial membrane.

Putrid aliments and corrupted water evidently irritate the digestive mucous membrane; this is also the case with distilled liquors, aromatics, alkalines, and mercurials. When adynamic fever develops itself under the influence of these morbific agents, it is always preceded by the signs of gastro-enteritis, with or without bilious symptoms, which continues with the symptoms of prostration, until the happy or fatal termination. What is called the gastro-adynamic complication is then evident.

Do deleterious emanations, putrid aliments, alcoholic liquors and other agents, which provoke gastro-enteritis, determine the adynamic symptoms by transporting their molecules to the heart or brain, or only by the irritation which they occasion in the mucous membranes? The conveyance of molecules to these viscera, not having been rigorously demonstrated, cannot be admitted and no pathologic or therapeutic principle can be established upon a mere presumption. It is better to leave a chasm in the science than to supply the deficiency by error, or, what is little better, by a supposition.

Quarin distinguishes five kinds of putrid fever:

The first, complicated with inflammation, characterized by hardness of the pulse, redness of the face, turgescence of the veins, in addition to the symptoms of putridity, and occurring in sanguine persons of luxurious habits, addicted to spirituous liquors, or in those, who at the commencement of the disease have sought to elevate their vital force by the use of wine and aromatic drinks.

The second, characterized by a pulse which is not very weak, moderate prostration, an aspect less pale and clayey, by bitterness of the mouth, a sense of oppression at the epigastrium and fetid eructations; "the *putrid matter*," he says, "is entirely in the primæ viæ:" this variety is observed in subjects who have eaten largely of putrid meat or fish;

The third, characterized by the weakness, quickness, and ine-

quality of the pulse; copious sweats, fetid urine, and epigastric oppression; the *focus of putridity* is, in this case, also in the primæ viæ, but the *putrid* principle has passed into the blood.

The fourth presents the following characters; viz. feeble and accelerated pulse, great prostration, copious sweats, frequent watery dejections, livid tongue, pale and ghastly countenance, obscure vision, petechiæ, tremors; want of appetite, the nausea and vomiting less than in the preceding case; these phenomena occur, when the putrid matter derived from contagion, from an epidemic constitution, or from the use of putrid water, affects primarily,—says Quarin, the *mass* of blood, from which it afterwards separates, to throw itself upon the primæ viæ.

Finally, in the fifth variety, an inflammation develops itself; the putrid matter inflames and corrodes the primæ viæ, the pulse is quick, small, sub-renitent, and gives to the fingers the sensation of a wire passing along the artery; the tongue is very dry, the cheeks red; delirium, meteorism; convulsions and hiccough supervene; drinks, medicines and every liquid are thrown up; an ichorous diarrhœa occurs, and death soon closes the scene. This exposition is remarkable for the fact, that the affection, whether primitive or secondary of the digestive passages, and finally, the inflammation of these parts, in putrid fever, are formally recognised; but it is made subordinate to a matter furnished by the food, and introduced by the primæ viæ into the blood, or derived from the air, from water, introduced into the circulation, and by it thrown upon the primæ viæ. This theory was in keeping with the ideas that prevailed at that time, with regard to venous absorption. Since the absorbent faculty of these vessels has been demonstrated, it is natural that new experiments on animals should be instituted, with a view to determine the influence, on the economy, of putrid matters introduced directly into the veins. This has been done by J. B. Gaspard, who has derived the following results from his experiments:

Pus, introduced into the veins, in a small quantity, may circulate in them without causing death, provided, that after having determined a considerable functional derangement, it be expelled from the economy by means of some critical excretion, especially of the urine and fecal matters; but, introduced in small quantities, several times in succession, it ultimately causes death. It

determines death more quickly when injected in large doses; it then causes diverse grave phlegmasiæ, carditis, peripneumonia, dysentery, &c. The presence of putrid fluids, animal or vegetable, introduced into the circulation, either by means of venous injection or serous absorption, determines an inflammation, often accompanied by hemorrhage, of the mucous membrane of the intestinal canal; putrid vegetable matter is the least active: ammonia, dissolved in water, causes inflammation of the intestines without hemorrhage.

M. Majendie, has laid it down as incontrovertible, that the black vomit and dejections were evidently the effect of an alteration of the blood, caused by the introduction of putrid matters into the circulation, and he declares that the results obtained by M. Gaspard, are perfectly correct; but the results of his own experiments prove that different kinds of putrid animal substances have not the same effect; the muscles of the herbivorous animals, are not, under these circumstances, so deleterious as those of carnivorous animals: water tainted with putrid oysters, does not produce very violent effects; the most deleterious is that which is tainted with putrid fish. These fluids, when introduced, even in large quantities, into the stomach and intestines, produce no injurious effects. Injected into the bronchia, they produce consequences of a more serious nature than when introduced directly into the veins.

It results, from these experiments, that gastro-intestinal inflammation is one of the most constant effects of the presence of putrid liquids in the blood; but that this phlegmasia is not the only one they may occasion, since we observe the occurrence of those of the lungs and the heart.

It remains to be determined, whether the fluids, the effluvia, the miasmata, in a word, the putrid emanations, produced the same effect. Some experiments of M. Majendie, go to establish the fact, that the prolonged respiration of these emanations produces death, but in a slow manner; inflammation only occurs in the intestinal mucous membrane, and is of little intensity.

M. Gaspard asserts, that the putrid liquid, injected into the veins, inflames the columnæ carneæ of the heart, and the *valvulæ conniventes* of the intestinal canal. To prove that there is a real absorption of putrid matter in a state of disease, as oc-

curs in the experiments, he cites the case of the inoculation of epizootic dysentery, attended with pustula maligna, by means of pieces of woollen cloth, steeped in the humours of the diseased animals, and introduced into the cellular tissue, by means of a seton, or into wounds; and, likewise, the communication of the disease by the insufflation of the intestinal gases of diseased animals, or by the injection of their morbid fluids into the nostrils; or, finally, by the injection of the blood, the bile, or the excrementitial sanies of the dead or diseased animals. M. Gaspard thinks, that if the absorption of putrid matter by the pulmonary, gastric, and intestinal mucous surfaces be less hurtful than its direct introduction into the veins, it is not less real, and that it after a time produces the same result.

From these facts, this physician concludes, that we must admit a state of essential alteration of the blood, which is, especially towards the termination, very black, viscid, and deprived of its plasticity and its fibrine, and escapes by a species of vascular transudation; that this state is indicated by the fetid odour of the breath, the urine, the sweat, and the alvine dejection, by meteorism of the abdomen, by the development of gas in the intestines, in the cellular tissue, and even in the blood, by anthrax, by suppuration of the parotids, partial gangrenes, softening of the flesh and rapid putrefaction of the bodies. He thinks, that this condition of the blood is sometimes a particular, spontaneous, undivided, constitutional, *putrid diathesis*, sometimes the effect of the absorption of putrid substances, and sometimes the result of atmospheric heat.

Certain experimentalists, who censure the hasty conjectures of physicians, are themselves by no means slow in drawing conclusions. Medical science with them only dates from the period at which they first created artificial diseases in animals; and, what is very remarkable, their labours have a tendency to carry the science back to what it was, when the organs were considered as pumps, retorts, and alembics.

Whatever praise be due to MM. Gaspard and Majendie, it is not yet proved, that the pus injected into the veins is expelled with the urine and fecal matters, because its presence in these matters has not yet been established.

Inflammations of the heart, of the lungs and intestines, de-

termined by the introduction of pus into the veins, constitute a
morbid state not less essential than that in which we suppose the
blood to be. The black vomit and alvine dejections are more na-
turally referred to inflammation of the stomach and intestines,
which is acknowledged to exist, than to a chemical alteration of
the blood, which chemistry has not been able to prove. It re-
mains still to demonstrate the natural introduction of putrid
fluids into the blood by the digestive passages, and it would like-
wise remain to demonstrate the introduction of putrid emana-
tions by the respiratory passages, if M. Piollet had not rendered
it at least very probable, by respiring putrid gases, the odour of
which was soon perceived in his urine and sweat.

Nothing conclusive has been done to determine whether the
miasmata are introduced into the circulation by the skin: the
inoculation of pustula maligna and dysentery, practised on
animals, requires to be repeated. The essential alteration of the
blood, admitted by M. Gaspard, is observed in the experiments,
if we may consider the presence of a foreign matter in this
fluid as a proof of it. But the existence of this alteration has not
been demonstrated in cases of natural disease. M. Gaspard has
given, as signs of this state, the phenomena of gastro-intestinal
and peritoneal inflammation. It is a gratuitous supposition that
this state may arise spontaneously. All the phenomena which
he points out, never occur except as a consequence of excesses of
the table; the influence of miasmata and excessive heat does not
determine them, except after a succulent or gross alimentation, a
cerebral affection or a sudden chilling of the skin. The inflam-
mation which occurs in the left, and sometimes in the right
cavities of the heart, owing to the presence of a putrid fluid,
shows that the phenomena which are construed into signs pe-
culiar to an alteration of the blood, depend in a great measure
upon carditis, and perhaps also on angiotitis of greater or less
extent. These fluids act in the same manner as other deleterious
fluids, vegetable or mineral, injected into the veins, which equally
inflame the lungs, the gastro-intestinal mucous membrane, and
doubtless, the heart also.

The kidneys probably participate more or less in the irritation
of the digestive passages. The presence of any irritating foreign
matter in the blood can no more authorize the name of essential

alteration of the liquid, than the presence of the same matter in the alimentary canal can authorize the assertion of an essential alteration of the gastro-intestinal membrane. If the blood does, indeed, become altered by a mixture with putrid fluids, this alteration has not yet been demonstrated: for to assert that the blood is black and viscid after death, is to say nothing satisfactory, as this is the case after many diseases purely inflammatory: and even were this alteration demonstrated in experiments, it does not follow that it takes place in disease. Even admitting this alteration, it would only be one of the effects of the presence of the putrid liquids, and not the cause of the inflammation of the heart determined by these fluids. We may, with Quarin, attribute the inflammation of the intestinal canal to the conveyance of these fluids to it, with as much reason as to the alteration of the blood. Finally, conceding all they wish to MM. Gaspard and Majendie, it is proved by their own experiments that there is gastro-enteritis, carditis and pneumonia in the adynamic fever; that it is by these inflammations, and particularly by the first, that the greater number of patients perish in this disease; that, consequently, we must combat it by the remedies appropriate to these phlegmasiæ, with the exception of the modifications relative to the exciting cause derived from the experience of all ages, and not from the experiments, certainly ingenious, of those physiologists.

Should any one find subtleties in the objections alleged against the theories which have been opposed, he should not be surprised; for it is the property of the humoral doctrine to introduce subtleties into science, and it is for that reason we oppose it.

Want of cleanliness injures the skin, excessive evacuations diminish the materials of the organism, excess of venery and fatigue powerfully stimulate the brain, and throw it into a state of stupor; grief, excessive study, and prolonged watching produce an irritation of this organ, determine an afflux towards it, of which diminished sensorial power is the first symptom; the skin, the circulatory system, and the encephalon are likewise disposed to feel the influence of other causes, but the irritations of these organs never alone determine the adynamic fever.

The causes, then, which determine this fever are most general-

ly, in the first place, those which irritate the gastro-intestinal mu-
cous membrane, and in the second place those which tend to dimi-
nish the functional activity of the brain. Supposing, then, that the
analysis of the causes and symptoms of the adynamic fever can
be carried no farther, we have already enough to convince us
that there is nothing in this fever but a gastro-enteritis with
astheny of the brain. We shall now inquire whether this as-
theny be real, and whether it merits more attention than the
gastric irritation.

We must not conclude from the impaired action, or even from
the complete interruption of the action of an organ, that it is nei-
ther irritated nor inflamed: on the contrary, we witness a cessa-
tion of function in almost all the organs when suffering from an
irritation, a phlegmasia, or an afflux of blood. The sight, the
hearing, the smell, the taste, and the touch itself, are destroyed,
when their respective organs become inflamed; an intense phleg-
masia of the lungs diminishes their influence upon the air and
blood; the heart excessively irritated ceases to beat; the intes-
tines do not contract when they are inflamed: in a word, the sus-
pension, the diminution and even the abolition of a function are
more frequently the effect of acute or chronic inflammation of
the organ charged with its performance than of the astheny of
this organ. Do we not in apoplexy witness the extinction of
all the functions of relation, owing to the rapid afflux of blood
to the part? This afflux is not attributed to weakness, except by
persons who are ignorant of the laws of life. It may then be
asserted, that if there be sometimes a real astheny of the brain
in adynamic fever, there is much more frequently sympathetic
irritation of this organ, or of its connexions; and, indeed, if the
intellectual activity generally diminishes, the headache, delirium,
insomnolence, contusive pains in the extremities, and the groans
of the patient, by no means indicate a state of weakness of the
brain. It is evident that the only reason why adynamic fever
is referred to weakness as its cause, is the existence of muscular
debility.

Hitherto I have only considered this fever in a general man-
ner, and as Pinel has described it; I shall now examine the value
of the precursory sign which he attributes to it: I shall then
show that in his enumeration of the symptoms of this disease he

has confounded three distinct states, which should be distinguished.

Now, if we cast a glance over the precursory signs of adynamic fever, we shall see that every thing in them announces not so much weakness as irritation of important organs. These signs are, 1st, derangement of digestion: this symptom indicates a lesion of the stomach, most frequently an irritation of this viscus, never a general debility; 2ndly, an obtuse cephalalgy; however obtuse be the cephalalgy, it is always indicative of a state of suffering, arising from irritation, and not from weakness of the brain; 3dly, obstinate somnolence; another sign of cerebral suffering; 4thly, a state of stupor; we should here recall what has been said of this symptom; 5thly, undefined pains in the limbs, the usual precursory sign of most diseases, whatever be their seat or nature; besides, no pain is the effect of weakness; 6thly, spontaneous lassitude; this symptom is likewise observed at the commencement of all diseases, and especially of internal inflammamation; 7thly, a sense of general heaviness; this precursory symptom is common to the adynamic fever, and a state of plethora as well as to synocha: nothing can, therefore, be inferred from it with regard to the nature of the first of these fevers.

Since then a detailed examination of the symptoms, the causes, and precursory signs of adynamic fever, shows that a number of organs are sur-excited in this disease; that the circulatory movement, the cerebral functions, and locomotion alone become languid or are suspended, and this only at the highest degree, or rather at the last period of the disease; that in the commencement of adynamic fever there is always an augmentation of vital action in the principal organs, a fact which excludes the idea of a radical and especially of a general weakness; it must be acknowledged that this fever is not primitively owing to weakness. If we farther consider that in the midst of the symptom of debility, the symptoms of irritation continue to show themselves in the plurality of cases, and this generally until the last instant of life, we shall be compelled to conclude that the adynamic fever is never a disease essentially asthenic, as has been asserted. It then remains to decide whether weakness occurs in the decline of the disease. Now, observation decides that it does not occur until after the fever has lost all the characters which have given

rise to the term adynamia; that is, until convalescence or the last
agony.

I might now pass on to an exposition of the symptoms detect-
ed on post mortem examination; but before entering upon the
consideration of this incontrovertible proof, I deem it proper to
observe that if the existence of adynamic fever continues to be
admitted, we must admit at least three varieties of it. The first,
to which I must be permitted to assign the name of the *dry* ady-
namic fever, is that which manifests itself at the commencement,
during the course, or at the decline of any inflammation, except
that of the digestive passages, and that without being the pro-
duct of gastro-enteritis, as it is sometimes observed in inflamma-
tion of the lungs, the pleura, the peritonium, the bladder, the
uterus, the heart, and perhaps the blood vessels, &c., and in the
case of wounds, which, owing to prolonged and profuse suppu-
ration, occasion death without producing gastro-enteritis. This
variety presents neither gastric fever nor fetid excretions of any
kind; the sputa alone sometimes derive a peculiar character from
the state of the lungs. Such is the adynamic fever which some-
times complicates the inflammatory fever, not dependent upon
gastro-enteritis, or any phlegmasia; or which, in language used
even at the present day, masks these diseases *Inflammatory
fever, simulating the adynamic; false adynamic fever.*

The second variety, which may be called *humid* or *putrid,*
if the term be preferred, is the highest degree, and is sometimes
seen at the commencement of intense gastro-enteritis, and is cha-
racterized by diarrhœa, vomiting, fetid dejections, sweat, and
urine. It constitutes the putrid synocha of the Galenists. This
variety also supervenes in the course of many phlegmasiæ, when
they are joined with an intense gastro-enteritis. This species
is what is sometimes designated by the name of *gastro-bilioso-
adynamic* or *mucoso-adynamic* fever, primitive or secondary.
Finally, the third variety is that which they say occurs without
any preceding or concomitant sign of unequivocal irritation in
any of the organs constituting the *essential* adynamic fever of
certain authors, who still believe that such exist, although their
infrequency is no longer disputed.

But the *dry* adynamic fever is evidently the effect only of an
oppression of the heart and brain, resulting from some phleg-

masia of great intensity, or supervening in a subject badly nou-
rished or predisposed to cerebral affections, by grief or study.
The *humid* adynamic fever is a group of symptoms of pros-
tration, the effect of a primitive or secondary gastro-enteritis,
developed under analogous circumstances. Finally, the es-
sential adynamic fever is referrible to one or other of the two
preceding varieties, in which the symptoms of irritation, consti-
tuting the disease, are misunderstood: 1st, because the patients
are brought to the hospital at too late a period, and it is impos-
sible to obtain any information with regard to them; 2ndly, be-
cause prostration, stupor and immobility supervene so rapidly,
or are so intense, that they do not permit the signs of irritation
to be distinguished. There are, perhaps, cases in which the ir-
ritation of the organ primitively affected ceases, although the
morbid state of the heart and brain which gives rise to the lan-
guor of the circulatory movement of the intellectual functions,
and the muscular motion, continues. If this sometimes occurs,
it certainly is but seldom. If we cannot altogether refuse to ad-
mit such a case, it must be considered only as a probable occur-
rence, and not as a demonstrated fact. Opinions the most op-
posite are thus reconciled without the danger of any practical
error, provided we recognise, 1st, that the infrequency of these
cases make it necessary that they be regarded as forming an ex-
ception, and not a rule; 2ndly, that in these cases the adynamic
symptoms are also in consequence of an irritation; 3dly, that this
prolongation of the symptoms of languor in the circulation, the
cerebral functions and the muscular movements, is not observed,
except after a continuance generally very protracted, and a gra-
dual diminution of the primitive irritation; 4thly, that in this
state of things the slightest cause may renew the irritation and
augment the symptoms which we wish to dissipate, and that
these symptoms usually cease spontaneously, when the irritation
is not reproduced by inappropriate treatment, provided the pri-
mitive irritation has not been exceedingly intense; finally, that
it is better to abandon the patient to nature, than to endeavour to
obviate the stupor by stimulating the organ which has been and
perhaps still is in a state of irritation, notwithstanding all appear-
ances to the contrary.

From these observations the following conclusions may, I

think, be deduced: 1st, that the group of symptoms, to which the name of adynamic fever has been assigned, is almost always the most intense degree of gastric or mucous fever, sometimes of synocha; that is to say, most frequently of a primitive or secondary gastro-enteritis, and sometimes of some other primitive irritation, complicated or not with gastro-enteritis; 2dly, that when the irritation, which occasions the symptoms termed adynamic, has ceased in the organ primitively affected, if the morbid state which it has occasioned sympathetically in the encephalon or in the heart sometimes continues, it is no longer the adynamic fever, such as Pinel has described it; it is a state purely secondary, which has now become idiopathic; 3dly, that facts do not authorize us to consider this condition as an asthenic affection; but that analogy, on the contrary, would incline us to class it among irritations of this viscus, although there certainly are still important researches to be made on this point.

These principles being laid down, every thing becomes clear in the history of adynamic fever.

Pinel asserts, that it continues from seven to forty days; that when it terminates favourably, there supervenes a troubled urine with a grayish sediment, a general warm sweat, dejections of homogeneous matters, resembling lees of wine, sometimes inflammations of the parotid glands, and abscesses. In all this, there is nothing which may not occur in the fevers which have already been treated of. The slight gastro-enteritis which gives rise to inflammatory fever of little intensity, in infants, often ceases after the appearance of glandular tumours of the sub-maxillary region or of the groin, and sometimes of the testicle, or it sometimes continues after the appearance of these tumours. It is far from true that inflammation of the parotids always announces the favourable termination of adynamic fever; the contrary is often the case. This sign, to be favourable, must coincide with the termination of other symptoms. The same is the case with all the signs; none of them have any value when isolated. Deafness, which occurs at an advanced period, is regarded as a favourable symptom, but it has not been considered that it never supervenes, or rather, that it is never observed, except when the patient has recovered sensation and motion; that is, after the commencement of convalescence: at this period, favourable signs are not wanting.

The favourable symptoms have exercised the sagacity of Hippocrates, and all semeiologists. Among these phenomena, some are common to most of the diseases which terminate in death; others belong especially to fatal gastro-enteritis. The former are, impossibility of deglutition and the falling of the drinks into the œsophagus, as if it were a lifeless tube; smallness, weakness, irregularity and intermission of pulse; the respiration accelerated, difficult, and short, and the breath cold, the sweat partial, clammy and cold, like the skin; a black sediment of the urine; *subsultus tendinum*, perfect insensibility, want of reaction in the skin, notwithstanding the application of vesicatories and other stimulants. The latter are, the continuance of vomiting and diarrhœa; a discharge, by the mouth, anus, or nostrils, of black matters, exhaling a cadaverous odour, or of black and liquid blood; meteorism of the abdomen. None of these phenomena, considered alone, indicate death, although they should occasion the greatest solicitude; but their union banishes all well founded hope.

The reader must perceive, that in giving a description of the adynamic fever, and in investigating its nature and seat, I have retraced the history of the synochal, gastric and mucous fevers, which terminate fatally after a remarkable languor of the circulation, the intellectual functions and locomotion. Doubtless, it will be granted that when these diseases are epidemic, their nature and seat are the same as when they are sporadic; epidemic adynamic fevers having received the name of *typhus*, they shall be made the subject of one of the following chapters. Let us now see whether post-mortem examination confirms what has been said with regard to the nature and seat of adynamic fever.

The lesions detected after the fatal termination of adynamic fever, are by Pinel reduced to a small compass: "Autopsy," says he, "furnishes variable results: sometimes no lesion of importance is found in the organs; at other times there is a deep redness of most of the mucous membranes, or a serous effusion into the ventricles of the brain."

It is certainly surprising, that a physician, who has so often recommended the study of pathological anatomy, should think himself at liberty to dismiss so lightly the consideration of these lesions: doubtless, he found them too insignificant, and too com-

mon for serious attention; besides, every local lesion warred with
his favourite opinions, in regard to the seat of fever. These ma-
ladies being general, what light could lesions of so little extent
and profundity throw upon their nature? These lesions, on the
contrary, assume great importance, when we cease to consider
fevers as invading the whole organism: when we are convinced
that they are all derived from a lesion, primitively local. In
the preceding chapter, we have found that Rœderer and Wag-
ler, Sarcone and Cotugno, found in the bodies of those who fell
victims to mucous fever, unequivocal marks of inflammation, not,
however, without the previous existence of adynamic or ataxic
symptoms. If I have not given in this chapter a relation of their
anatomical researches, it is because they appear to establish the
transition of fevers, (which, according to nosologists, are not fa-
tal,) into those which, unfortunately, are generally mortal.
Since the gastric fever becomes adynamic, more frequently, and
more manifestly, than the mucous fever, post mortem examina-
tions in this fever, have not been reported, except under the
name of adynamic or ataxic fever.

Numerous examinations have convinced M. Prost, that after
the fatal termination of adynamic fevers, there are always found
traces of inflammation of the gastro-intestinal mucous mem-
brane. M. Broussais, who originally was not of this opinion,
has at last convinced himself that it is founded upon the obser-
vation of facts. I have witnessed his researches, for more than
a year, at the hospital of Val de Grace; I have likewise made
similar researches at the hospital of Gros-Caillou. During the
first years of my medical studies, I opened a great number of
bodies under the direction of Cognier, a laborious and modest
inquirer, who faithfully sought the traces of disease in the organs,
without a view to confirm or combat any system. I proceed now
to give the result of my studies, firmly believing that all physi-
cians may convince themselves of their accuracy.

The lesions found on dissection vary according as the inflam-
mation which constitutes the adynamic fever, has been confined
to the stomach and intestines, or has involved other organs.
Thus, in the variety which has been denominated *dry adyna-
mic* fever, we must generally discover the known traces of the
phlegmasiæ of the brain, the bronchia, the lungs, the pleura, the

larynx, the liver, the uterus, the kidneys, the bladder, the cel-
lular tissue, the abdomen or the limbs, &c. The digestive pas-
sages do not exhibit morbid traces, except in a slight degree. In
the variety to which I have given the name of *humid ady-*
namic fever, whether it has, or has not, been accompanied by
one of the phlegmasiæ I have just pointed out, there is almost
always unequivocal, and sometimes very profound, traces of gas-
tritis, of enteritis, or of gastro-enteritis. At the termination of
essential adynamic fever, that is to say, if that which appears
to be without any signs of irritation, we still more frequently
find traces of the same character, which nothing indicated during
life. Finally, there are cases very limited in number, in which
we detect after death no appreciable lesion in any organ what-
ever, no matter of what character may have been the symptoms:
but this seldom occurs in the humid or putrid variety. It is
only when the disease has been promptly mortal, or when it has
continued for a long time, when death has occurred before the
complete development of the signs of irritation, or a long time
after their cessation, especially if they have been of short con-
tinuance, that we find no traces of inflammation.

It is then in the stomach and intestines that we find the most
remarkable and most constant alterations, at the termination
of adynamic fever; but to detect these alterations, we must
not limit ourselves to a superficial glance at the intestinal mass,
without disturbing its convolutions, since the organic changes
generally occur in the mucous coat, while the peritoneal re-
mains sound. The declamations of physicians, who still please
themselves by repeating that dissection throws no light upon the
nature and seat of adynamic fever, prove only that they have
examined very slightly the intestinal canal, or that they have
examined, and wanted capacity to draw conclusions from their
examinations, or, finally, that they are total strangers to any re-
searches of this kind. It has been reserved for the present age
to witness the presumption of physicians deciding upon the
utility or inconveniences of post mortem examinations, in the in-
vestigation of the nature and seat of disease, without ever having
opened a single body. A desire to flatter the errors in vogue,
among certain persons, has induced them to venture beyond the
narrow limits of their knowledge.

On opening the abdomen, the stomach and intestines frequently appear quite sound; at other times, they present a bluish tinge with a kind of transparency; in other cases, we observe spots, more or less numerous, brown, blackish, or even absolutely black, spread over the surface. Sometimes the stomach and intestines are distended by gases; at other times, the stomach is contracted, and reduced to the ordinary size of the intestine.

If we lay open the whole digestive canal, from the cardia to the anus, and remove the mucous, fecal, and other matters which they contain, the mucous membrane is almost always found injected, dotted with red points, covered with patches of a clear or deep red, purple, violet, bluish, brown, blackish, or of a slate-coloured gray: this membrane is thickened, softened, ulcerated; its surface displays small scattered spots or cicatrices.

The injection of the mucous membrane of the digestive passages, is recognised by numerous striæ, disposed in a reticulated manner, and evidently formed by the little vessels of this membrane, dilated and still filled with blood. These striæ are more or less numerous and crowded, and are sometimes visible externally: they may be compared to those which appear upon the conjunctiva, in ophthalmia; and better still to those observed upon the membrane of the isthmus of the fauces, and upon the velum palati, in angina. These striæ, which are sometimes of a bright and sometimes of a deep red, often extend over considerable portions of the mucous membrane of the digestive organs.

Instead of vascular striæ, there are often bright red points, more or less crowded together, which only occupy portions, of little extent, of the mucous membrane of the digestive passages.

These striæ and points, when they are very near to each other, form patches, the number, extent, and form of which vary very much. Sometimes a ground of striæ is not marked with these points.

Besides the patches which I have just mentioned, there are others, in which the injection is so complete, that we hardly discover any distinct striæ or points; their colour varies from a bright red to a black, such as we observe on the surface of gangrenous wounds. These patches, the extent of which varies from

the length of a nail to that of a finger, frequently invade almost the whole surface of the stomach, and the greater part of the small intestines. The internal membrane of these parts is often red, grayish, or black, over an extent of one or more feet.

When there is but a simple injection, or points only, the mucous membrane is generally thickened; it is often so when the striæ and points are distributed in patches, almost always when the patches present a uniformly red colour, and always when a slate-coloured gray tint is observed on them.

When the digestive membrane presents a bluish tint, visible through the muscular serous and cellular membranes, as sometimes is the case, over the whole extent, the parietes of the intestines is very thin, and almost transparent: this state does not prevent the existence of striæ, or red points over diverse points of its internal surface.

If we examine with care the red, gray, or blackish points of the gastro-intestinal mucous membrane, we perceive that they often undergo a true softening, and that they are sometimes reduced to a sort of pulpy or gelatiniform substance. This alteration sometimes takes place on portions of the intestines which present no redness, or which are red and black only at distant points. There is often a black point in the centre of the softened portions, the extent of which varies from less than a line to the size of a guinea, or it may be even greater: this point sometimes involves the whole thickness of the intestine, forming on the surface of the serous membrane the black patches which have been mentioned.

The softening is sometimes very circumscribed, and the result of its highest degree is then the formation of ulcers, presenting generally a few lines of diameter, sometimes very extended, the edges of which are thick and perpendicular, implicating the mucous, and sometimes the muscular coat: the bottom of the ulcers is grayish, or whitish, like most of those occupying the mucous membrane. These ulcers are often surrounded by an areola of a red colour, more or less deep: they are sometimes observed upon the posterior, sometimes upon the anterior portion of the intestinal surface of the mucous membrane of the intestines; more frequently, about the termination of the small intestine, especially near the ilio-cœcal valve than in the great

intestine, except in the case of diarrhœa; more frequently in the latter than in the stomach, and more frequently in the colon than in the rectum.   On the surface of these ulcers, or around them, we frequently find vegetations, sometimes large, soft or hard, red or blackish.

In place of circumscribed ulcers, generally rounded, we sometimes detect a sort of wasting of the coats of the stomach, the thickness of which diminishes insensibly to a point, where they are excessively thin and transparent, or even perforated.   This wasting, which is always of great extent, is less frequently observed in the intestines; but it is by no means uncommon to discover in the latter, as well as in the stomach, a circumscribed wasting, in the centre of which there is a perforation, such as might be made by a pointed instrument.   Whatever may be the seat of the perforation, the part which it occupies is often red or brownish after death; at other times, it presents no remarkable discoloration.

When perforation takes place in any part of the canal, the contained fluids pass either in whole, or in part, into the cavity of the peritoneum, upon which are always found, in this case, traces of inflammation.   Perforation sometimes occurs between two adherent pieces of intestine, so that the effusion does not occur, the matters passing from one intestine to another by this abnormal communication.

Much has been said of the invagination of the intestines, and many researches remain to be made with regard to this singular lesion, which is not uncommon after adynamic fever: it is sometimes found in many places, and is often very extended; it almost always consists of the inferior portion introduced into the superior, and is very generally accompanied by traces of inflammation.

The peritoneum generally presents traces of inflammation when the abdomen has been very painful to the touch.   It is not uncommon to find diverse alterations in the portions of the mesentery, which correspond to the inflamed parts of the intestines: it is often found red or retracted: this circumstance causes the parts of intestines which have suffered lesion, to be situated deeply in the abdomen, whilst the sound parts cover them, and are presented first to view.   The mesenteric glands which are

in the vicinity of the inflamed parts, are often tumefied, red, and remittent.   Bordeu,* Rœderer, Wagler,† and Sarcone, made this remark, which has been repeated, and the value of which has been proved by M. Broussais.

The digestive cavities contain fluids more or less abundant, and of various aspect.   There is sometimes a considerable quantity of mucosity occasionally disposed in a membraniform layer of greater or less extent, or in glairy masses; sometimes, though more rarely, a certain quantity of bile of diverse colours; finally, we sometimes find a blackish or grayish and serous fluid, or blood, black and liquid, or coagulated and grumous.   The existence of worms is not a matter of any constancy.   Very often there are no fecal matters, every where ulcers are found when the patient has been upon a diet, and when lavements have been administered.

Such is the summary or history of the diverse alterations detected after death in the stomach and bowels of those who succumb with the signs of adynamic fever when the digestive tube has been inflamed.   If to gastro-enteritis, there be joined an inflammation to some other part of the organism, we most frequently find traces of the latter.   If, for example, there have been some signs of irritation of the encephalon, if there has been delirium, notwithstanding the prostration, we find the vessels of the brain gorged with blood, the arachnoid reddish, opaque, and thickened, and serosity on the surface of this membrane.   If there has been cough, oppression, or a painful point of the thorax, the bronchia and pleura are red, and the pulmonary parenchyma gorged with blood.   In the case of the angina, called gangrenous, the mucous membrane of the pharynx presents traces of the most violent inflammation of which the gastro-enteritis has been only the extension or repetition.

After adynamic bilious fever, the biliary ducts and the gall-bladder itself partake of the redness, more or less deep, of the gastro-duodenal mucous membrane; the liver is gorged with a black blood, which flows out when its tissue is divided.

I have spoken of the lesions which are found in the bodies of

* Œvres Completes. Paris, 1818, tome 1, p. 110.
† De Morbo Mucoso, p. 310.

those who have fallen victims to the mucous fever, and there-fore, in general, to the adynamic mucous fever.

When there has been suppression of urine, the kidneys are red, more remittent than usual, sometimes without appreciable alteration. The mucous membrane of the bladder is very often manifestly injected, dotted with red or white points, like that of the intestinal canal.

The glans penis and the internal face of the labia majora, are in some cases of a bright red, dark or violet colour, an ap-pearance which indicates what is afterwards discovered on dis-section.

Is it possible to discover during life the degree of inflamma-tion, and to foretel the kind of organic change which dissection will reveal in case of death, in the organ, the inflammation of which has given rise to the adynamic symptoms? In the present state of science, this question cannot be answered affirmatively, because researches are yet wanting with regard to the shades of symptoms that correspond peculiarly to each of these morbid changes. The difficulty of ascertaining during life the exact na-ture of the inflamed parts, presents one of the most serious ob-stacles to the direction and consequently to the success of treat-ment; but it must not, hence, be concluded that we are ignorant of the true nature of fever; for the same remark might, for a si-milar reason, be made in relation to peripneumonia.

If the remarks which have just been made had been published at an early period of the sciences, or when they were in their infancy, no objections would have been raised against them. The cultivators of medicine would have confined themselves to an observation of the patients and to post mortem observation, with a view to discover and perfect the diagnosis and treatment of adynamic fever, that is to say, of the inflammatory disease with symptoms of apparent debility which have received this name. But every theory which could overthrow doctrines ren-dered sacred by time and the authority of names justly celebrated, necessarily meets with opposition. The objections, however, which have been raised against the doctrine which has been ex-plained, are more remarkable for their frivolity than for strength of argument.

With a view to set aside the results of pathological anatomy

to which we are indebted for a knowledge of the nature and seat of adynamic fever, some physicians persist in asserting that the organs, and particularly those of digestion, present no traces of inflammation after death, or at least that these traces are very uncommon; that these alterations, however common, do not disprove the existence of an essential adynamic fever; that these alterations are not of so serious a character that we can attribute to them the death of the patient; that they are compatible with a state of health; that they are the effects of death; that they depend upon the remora of fecal matters; that they are not owing to inflammation; that they are but the effects of the fever; that they result from the astheny under which the patients labour in this fever; that they are the effects of an inflammation, but of an inflammation essentially gangrenous or atonic; finally, that they are the consequence of a true inflammation, but that this inflammation complicates and does not constitute the fever.

We shall consider these objections, and show how little foundation they possess.

1. The alterations which the organs, and particularly those of digestion, present after death from adynamic fever, have been denied. To deny is not to disprove a fact; it only evinces, in the present case, a desire to evade the consequences of this fact. How shall we properly answer those who deny that any thing is observed on dissection after these diseases. We can only say, that they have not seen, or have not wished to see.

2. It is pretended, that these alterations occur only in a very limited number of cases. Were this assertion admitted, (which it cannot be,) still we should have to determine what must be thought of those cases in which the alterations are manifest, and thus we should so far reduce the number of essential adynamic fevers.

3. Forced to concede that in at least three-fourths of the cases these alterations are found, some physicians admit the infrequency of essential and the frequency of symptomatic adynamic fever, while others continue to regard all these fevers as primitive. To the first we may answer, that the cases in which traces of inflammation are found, are to those in which they are absent, as one to a hundred, and consequently that essential adynamic fever, if it exist at all, is not only rare, but excessively so; a fact which

it is important to know with a view to treatment: with regard to the latter, it must be said that their labours can confer no benefit on humanity, or subserve the cause of science; that they vainly wish to destroy the authority of the most frequent cases by that of the most uncommon; that they cite exceptions to invalidate a rule which these very exceptions confirm; finally, that it is absurd to assert that a fact proves nothing, when it does exist, because it sometimes does not exist.

4. It is asserted that the traces mentioned, of what nature soever they may be, are not sufficiently profound to allow us to refer death to the lesion as its cause; a red or a black patch or even a gangrenous one cannot occasion death, since the suppuration of a portion or even of almost a whole lung does not determine it. But there is a great difference, in the danger occasioned by these lesions, between organs, which like the lungs are identical throughout their extent, and the parts of which may to a certain extent be vicarious to each other, and the portion of the digestive canal which extends from the cardia to the anus: the latter is in some sort a single organ, which, to perform properly its function should be sound in every part. The mucous membrane which lines it, resembles in this respect the mucous membrane of the bronchia: thus these two membranes are equally capable of occasioning death, when they are inflamed to a sufficient degree either to unfit them for their respective functions, or to act upon the brain, and to throw it into a state of suffering which constitutes the most dangerous complication. Now, if it be proved by the authority of the most respectable writers that croup and pleurisy may occasion death without leaving after them any traces but redness, cynanche pharyngea has destroyed great numbers in certain epidemics, and that without leaving any other trace than a redness less deep than that of health, or a gangrenous appearance of the membrane; if peripneumony itself sometimes leaves but a simple congestion of blood in the lung, an inflammation of the lining membrane of the digestive passages may equally exist without leaving after it traces more palpable, even when it occasions death.

Besides, it is not the injection, the red points or patches, nor even the gangrene discovered in the intestines, nor the traces of inflammation detected in the other organs, that occasion death

in adynamic fever. All these alterations are only the indices and vestiges of a formidable morbid state, which has resulted in an interruption of the function of the diseased organ, the disturbance or cessation of its influence upon a more important organ, or one equally important with itself. This slight vascular net-work and this large red or brownish spot are not, we are well aware, profound lesions of structure, but they indicate that there has been in this part during life an impetuous afflux of blood, redness, heat; in one word, a cause of pain, which the patient frequently does not point out, because he is unable to express his suffering with accuracy. These are the marks of a local and painful excess of the nutritive action, the result of which has been the destruction of vitality, at first in a part, and then in the rest of the economy.

Besides, how singularly constituted must that mind be, which denies the fatal influence of the lesion of a vital organ because this lesion does not involve the whole organ, and attributes death to organs in which no trace of disease is discovered, instead of referring it to those in which these are found sometimes, however slight?

5. These alterations are compatible, it is asserted, with a state of health; they have been detected in persons killed suddenly by mechanical causes; similar appearances have been observed in the intestinal canal of dogs killed for experiment: finally, such marks are often found after death without the previous existence of adynamic symptoms. The answer to all this is easy. Nothing directly proves that during life such alterations are borne with impunity. Did those, in whom they are detected after an accidental death, experience no derangement of the digestive organs at about the time of their death? This is not mentioned, and yet it is a circumstance important to be known. These alterations are not inseparable from adynamy; no one asserts that they are; but they prove, when they occur after adynamy, that the latter was occasioned by the lesion of which they were the vestiges, when there has been during life signs of irritation of the digestive organs, however slight or transient they may have been: the effect, however, of the brain more or less disposed to take on irritation is not to be disregarded as conducing to the fatal termination. As to the redness observed in the intestinal canal of healthy

dogs, what inferences with regard to man in a state of disease can be drawn from this?

6. The alterations found in dead bodies after the adynamic fever are the effects of death, of phenomena purely post mortem, according to some persons: let these persons, then, explain why they do not class among the same phenomena the redness of the mucous membrane of the bronchia and the throat, when it exists after death.   Professor Chaussier has pointed out the manner of distinguishing cadaverous marks; the alterations found after the death of subjects affected with adynamic fever cannot without great ignorance be confounded with them. Besides, it is not sufficient to advance a proposition to gain its admission; and it is yet to be proved that the alterations which evidently announce a phlegmasia when they are observed after the ingestion of poisonous substances, are only phenomena developed after death when they are found in subjects who have not been poisoned.

7. Some physicians, as a last resource, have attributed the irritation and inflammation of the gastro-intestinal mucous membrane in adynamic fever to the contact of fecal matters, and, to support this chimerical notion, they maintain, contrary to all experience, that the traces of inflammation are always found in the most declining part of the intestinal canal.   But these traces are likewise observed in the stomach, where there are no fecal matters, as well as in the small intestines, in which there are few: they are also observed, when there is not an atom of excrement in the whole intestinal tube, and, what is more, in most cases in which there has been diarrhœa.   And, when the intestines contain such matters, is it not ridiculous to assert that they injure only the declining part of these organs, since these organs closely embrace their contents?   This objection, therefore, does not merit serious consideration.

8. For the sake of depreciating the importance of the alterations observed after adynamic fever, it has been pretended, that they are not the result of inflammation; it has been forgotten that all the causes of adynamic fever excite the vital action of the organs which present traces of inflammation after death; that during life the phlegmasia is most frequently easily recognised, if we observe the patient with attention.

It has been forgotten that adynamic fever constantly succeeds

synochal gastric or mucous fever, that is to say, an inflammation
or irritation of some organ, particularly of the digestive organs.

9. These alterations are not the effect of the fever, if by it be
understood a group of symptoms; smallness of the pulse, sordes
of the teeth and prostration, could not determine redness of the
digestive canal.   If by fever be understood an unknown morbid
state, *sui generis*, the morbid alterations at least indicate, that
this state had its seat in the parts where they are detected, and it
is reasonable to conclude that it was not seated in any other
part, since it has left no other traces.   It only remains, then, to
determine the nature of this state: now, if when it leaves traces,
they perfectly resemble those of inflammation, if the causes
which determine it are the same as those of inflammation, if the
principal and primary symptoms are inflammatory, and if, in
inflammations, the nature of which is not contested, we ob-
serve the supervention of adynamic symptoms, which evidently
depend upon excessive inflammation; is it not reasonable to con-
clude, that the morbid state which constitutes adynamic fever,
is an inflammation? Or, is it desirable that it be considered only
an irritation?   To this I willingly consent, provided it be recog-
nised, that every irritation consists in an increased vital action,
and requires the employment of antiphlogistic measures.

10. Others, still more bold in their assertions, declare that
these alterations are the result of the general astheny under
which the patient labours in adynamic fever.   If we prove, that
astheny of the heart, of the stomach, and of the intestines, does
not determine them, it will be demonstrated at the same time that
general astheny does not.

How could the heart alone, in consequence of its weakness,
give rise to the formation of those gangrenous patches in which
the tissues, forming the digestive canal, are softened, and often
reduced to a state of corruption?   That the weakness of this
viscus might favour the transition from inflammation to gangrene,
there must have existed a previous inflammation; for gangrene
never exists without previous inflammation, however transient
this inflammation may have been.   Besides, the gangrenous
patches are but the last effects of the gastro-intestinal phlegmasia,
which generally gives rise to adynamic symptoms; if we judge
of them from strangulated hernia, inflammation certainly mani

fests itself before the development of the gangrenous eschars. Could the weakness of the heart determine the formation of the injected vascular net-work, of the points, of the red patches, in certain parts alone of the digestive canal? For local alteration of structure we can only imagine a local cause.

Astheny of the stomach and intestines could not be the cause of the phlegmasial alterations presented by the parts after death. What effect can this astheny produce?—The stasis of blood in the capillary vessels. But this stasis would take place uniformly, a result not observed in adynamic fever. These alterations are, I repeat it, local, and unless we suppose certain parts alone, of the intestines to be affected with weakness, we must attribute them to an irritation of portions of these organs of greater or less extent. Furthermore, it is difficult to imagine how astheny, which produces paleness of the tissues during life, should leave redness after death; while inflammation, which reddens the tissues during life, and often after death, throughout the whole system, should not be competent to the production of this effect in the mucous membrane of the intestines.

The redness of the digestive canal has been compared to that of the skin, which occurs in the same fever: the latter has been ascribed to weakness, and it has been inferred from this, that the former has a similar origin; but that this is the cause of the cuticular redness, has not been proved, and I do not, therefore, consider it incumbent upon me to show that it is not the cause of the intestinal redness.

11. It is conceded by some, that the alterations detected after death, in whatever organ, are indeed the result of an inflammation, to which the adynamic symptoms are willingly referred; but these admissions are qualified by the assertion, that this inflammation is essentially asthenic, atonic, adynamic, gangrenous. Thus it is, that after admissions, compelled by incontrovertible facts, they return to error by adopting an explanation totally devoid of sense.

What can be meant by an asthenic inflammation? Without entering upon the consideration of latent inflammation, let us mention that which manifests itself by pain, heat, redness, and swelling. It is generally admitted, that in every part which presents these four phenomena, the blood arrives in greater quan-

tity than in the surrounding parts, that the part affected trans-
mits to the brain unusual impressions which stimulate it, and occa-
sion new sensations, violent and painful. Now, how can it be
imagined, that the blood is determined in unusual quantities to a
weakened part, solely owing to the fact of its being debilitated?
And is it not singular, that the reality of this supposed weakness
should be considered as demonstrated by the phenomena of in-
flammation, which indicate, on the contrary, that, if this astheny
existed before them, it ceased when they manifested themselves.
It may with propriety be maintained, that debilitated parts be-
come more easily inflamed under the influence of the causes of
irritation; but whenever they are inflamed, they cease to be
weak; there is, therefore, no inflammation which essentially con-
sists in the astheny of any tissue whatsoever. Shall it be said,
that by an asthenic inflammation, is meant only a sthenic inflam-
mation like all the phlegmasiæ, but developed in a debilitated
individual? This is adopting the true principles of physiological
pathology; it only remains to recognise the fact, that a subject
who is debilitated, is not equally so in all his organs; if he be de-
bilitated in several, he is generally too strong in others, of-
ten of more importance; that inflammation is always identical,
whether it manifest itself in strong or weak subjects; that, un-
der all circumstances, it can vary only in intensity, depth, and
extent. If the course of inflammation be different in the scor-
butic and in the young and plethoric, it is owing to the nature
of the tissues in which it develops itself: in the former, these
tissues are destroyed slowly or rapidly, but without marked in-
flammatory phenomena; in the latter, inflammation ceases after
inflammatory phenomena, always very marked, and which ge-
nerally develop themselves with rapidity; but in both it always
constitutes the same morbid process. It would be useless to
dwell longer upon the demonstration of this truth, proved by
MM. Canaveri and Tommasini, and placed beyond all doubt by
M. Broussais.

" May not," say they, " this inflammation, which you believe
to be always identical, depend, at least sometimes, upon a delete-
rious principle, which adheres to the diseased tissues and de
stroys them, after the manner of caustics, or which modifies
them so powerfully that even after its removal, their disorganiza-

tion proceeds; provided always we do not oppose to it a thera-
peutic agent appropriate to the nature of this secret principle,
rather than of the phlegmasial symptoms, which manifest them-
selves? This objection derives its whole force from our not
weighing the value of all its terms.   There are, certainly, inflam-
mations which tend directly to gangrene, since this is a frequent
termination of the inflammatory state: there are likewise some
inflammations which nothing can prevent, terminating in this
manner; the tendency of others to this termination is arrested
by means which might be supposed to occasion it,—an inflam-
mation which terminates in gangrene being like all others; but
an exaltation of the vital action, has nothing in it peculiar: this
is proved by the fact, that we often succeed in arresting it by
antiphlogistics, and gangrene does not take place; why should
the inflammation be specifically different when we arrest it by
tonics? Antiphlogistic and tonic remedies act not on the cause
of inflammation, but upon the inflamed tissues: now, what-
ever be the means by which we dissipate this morbid state, it
nevertheless is sthenic in its nature.   An ophthalmia affects the
right eye: we treat it by an irritating topical application, and it
disappears.   A few days after it is observed in the left eye; it
is treated by antiphlogistics, and ceases: must we hence conclude
that it was sthenic in one eye and asthenic in the other?   We
find a certain number of patients in the same hospital affected
with gastro-enteritis; some are treated by tonics and others by
antiphlogistics; in all the symptoms have been the same, with the
exception of individual shades of intensity and extent: shall it
be said, that among those who have been cured by means of, or
notwithstanding these opposite modes of treatment, some have
been affected by sthenic and others by asthenic inflammations?
Unless I have treated very inadequately this subject, so impor-
tant and so difficult, the reader must be now convinced that such
a distinction is absurd, and, to remove the possibility of doubt,
it will be sufficient for me to prove that this celebrated division,
borrowed from the most objectionable part of the Brunonian
system, is only founded upon a superficial consideration of the
sympathetic influence of therapeutic agents, and upon the habit
of judging of the nature of disease according to properties vague-
ly assigned by empiricism to medicines.   The solution of this

problem is found in this fact, that tonics may sometimes cure an inflammation, and this is not more astonishing than to observe the strength restored by emollients.   Tonics cure inflammation either by causing a deprivation to an organ which has hitherto remained sound, or by constringing the inflamed tissues.

12. If truth does not at the first glance strike every mind, it need only be presented perseveringly, to induce the most obstinate to assent to it, so far as to deny only its practical consequences. Most physicians of the present day are convinced that there is no adynamic fever without the inflammation of an important organ, and most frequently of a portion, of greater or less extent, of the intestinal canal; but the greater number persist in considering this inflammation as only a complication of the fever, and not the fever itself.   Recognising at last the results too long neglected of observation, but not knowing how to reconcile them with the principles of their medical education, the tone of their opinions is derived, not from what they see, but from their cherished habits of thinking.   Whenever, in practice, they meet with a subject affected with gastro-enteritis, with peritonitis, with pneumonia, or any other inflammation, whether confined to a single organ or affecting several, and the symptoms of which are masked by prostration, instead of pronouncing the disease, as formerly, simply adynamic fever, they now denominate it adynamic fever complicated with inflammation of the stomach, the intestines, the peritoneum or the lungs.   This language would be frequently innocent, and only objectionable from its absurdity, were it not that the theory which dictates it exercises an influence upon practice.   But, to show themselves consistent with their erroneous opinions, these practitioners attack, on the one hand, adynamy with tonics, and, on the other, inflammation by antiphlogistics, often employing at the same moment these diametrically opposite means.

It is thus, that the most positive and precious results of observation may be neutralized by a theory, founded partly on error and partly on truth.   The name of disease is of little moment, provided there be no mistake with regard to its seat and nature, and provided the remedial measures are appropriate to both.   Let theory and practice harmonize with observation and experience, and the danger of an improper name disappears: we

cannot but be astonished, that men, who should be familiar with the laws of logical reasoning, should admit in one and the same subject, two essential maladies; the one, secondary and local, owing to excess; the other, primitive and general, owing to defect of force—maladies, which are to be attacked by tonics applied to the inflamed organs, and by debilitating measures acting primarily upon the weakened organs.

"In slight fevers," says M. Andral, "the point of departure is not always irritation of the digestive passages, (as has been well observed by M. Boisseau,) the symptoms may be referred to irritation of the encephalon, the bronchia, the intestines, the liver, the kidneys, or the muscles themselves. In the more violent fevers, also, we observe this multiplicity of lesions."[*]

M. Andral establishes three degrees of inflammation in the digestive tube; in the first, there is simply injection, more or less strong, of the mucous membrane; the second degree is marked by alteration of texture, whether it be thickened, softened, or exanthematous: this alteration may or may not involve the other coats; in the third degree, the mucous membrane, and the subjacent tissues becomes disorganized and ulcerated.— "These two last degrees," he remarks, "can never be mistaken; but to distinguish the first from injection by a stasis of blood, we must consider the symptoms that have preceded death, or the kind of death, observe the state of the lungs, of the right cavities of the heart, of the liver, and of the portal system."

This author reports, that in the bodies of thirty-eight patients, who died of *grave* fevers, eleven only presented traces of gastritis sufficiently marked to render it probable that this phlegmasia could exercise any influence upon the symptoms during life. Thirty, presented redness, exanthems, or ulcerations in the large intestines; but in fourteen, only, the lesions appeared to bear a proportion to the gravity of the symptoms. In the large intestines the alterations appeared more unfrequent, and less intense than in the other parts of the canal. In five patients, he found the digestive tube devoid of all lesions worthy of remark. It was only in a very small number of cases that he observed a decided and very marked phlegmasia of the digestive mucous membrane, analogous to the inflammation which is observed either

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[*] Clinique Medicale, 1, 497.

in the acute form in men and animals, destroyed by corrosive poisons, or in the chronic form in persons who die of chronic diarrhœa. The mesenteric glands appeared red, tumefied, engorged in most of the cases where the portions of the intestines corresponding to them were ulcerated. In two cases the liver was extremely dense; in one it had an unusually red tint; in a fourth it was extremely pale. In more than half the cases, the duodenum and superior part of the jejunum and ilium were filled with an extraordinary quantity of bile. In the gall-bladder this fluid was often black, viscous, of a syrupy consistence: at other times, clear, colourless; serous in a scorbutic subject; in a small number of cases, the gall duct contained a liquid of a sanious character, and of a dirty gray colour. In many, the spleen presented a considerable increase of size, and an extreme softness, a great friability. At other times, equally large but less soft, it contained an enormous quantity of black blood: in a small number of cases, it was large and very dense. In two or three cases, the pancreas was found injected, and larger than usual, chiefly in consequence of the engorgement of its interlobular tissue. In one subject, there were traces of a phlegmasia of the mucous membrane of the bladder: and in another, a slight injection of this membrane.

The pulmonary parenchyma was sometimes choked with a reddish serosity, soft, easily torn, crepitous, sometimes impermeable to the air, easily crushed, and resembling the softened spleen.

M. Andral has ten times observed red hepatization of the lungs, viz. thrice in the right lung, once in its superior lobe, twice in its inferior; six times in the left lung, once in its superior lobe, five times in the inferior, and once in the two lungs, occupying the left superior and right inferior lobe. Once he found gangrene of the centre of the right lung, which was hepatized in its inferior part. Gray hepatization was in some subjects combined with the red. In three cases, an enormous quantity of frothy serosity streamed from the lung, when its substance was divided. Twice he found in the lungs membraniform, albuminous concretions, without effusion. In four, the cavity of the lungs contained a sanguinolent serosity.

In the greater number of subjects, the heart was flaccid and

discoloured, its cavities either empty or containing a small quan-
tity of black and liquid blood; three or four times it contained
fibrous clots, without colouring matter, and very soft, which by
compression, were reduced to a thin and transparent cellular
net-work, owing to the expulsion of a limpid serosity.   The
blood was limpid, and of a deep black in the great arterial and
venous trunks.   In some subjects, there was observed in the
heart and great vessels a rosy tint, clear, and resembling water,
tinged with a small quantity of red colouring matter.   Some
small concrete fibrous grains were disposed here and there upon
the internal surface of the vessels.   In one subject, the liquid
contained in them was of the colour of lees of wine, in some
places of a sanious character.   In one, a white clot occupied the
whole extent of the descending thoracic aorta.   Once there was
a bright redness forming isolated patches, more numerous in the
abdominal than in the thoracic aorta.   The great venous trunks
never presented any thing peculiar.

Sanguineous effusions existed either in the serous membrane
of the brain of the spinal marrow, or thorax, or in the sub-se-
rous, sub-mucous, subcutaneous, or intermuscular cellular tissue.

In some, almost all these effusions were combined: there was
no clot, but sometimes a serosity of a more or less deep red,
sometimes a black liquid, resembling the blood which issues
from a vein just opened.

In five subjects, there was a high injection of the meninges,
which were still transparent; and in four of them, the injection
was confined to the convexity of the hemispheres; in the fifth,
it extended to the base of the brain.   In another subject, a tur-
bid lactescent serosity infiltrated the sub-arachnoid cellular tis-
sue of the convexity of the brain.   In a second, the arachnoid
of the convexity was friable, and tore off in small shreds when
an attempt was made to raise it, and it carried with it small por-
tions of the cerebral substance, which was red on its surface.
In every case, when the arachnoid was injected, the cerebral
substance was dotted with small red points: these points were
found, in some subjects, conjoined with sanguine engorgement
of the cerebral veins, without injection of the meninges.   Twice
the encephalic mass presented a remarkable hardness.   M. An-
dral does not notice the effusion, except when in sufficient quan-

tity to elevate the arachnoid membrane in a sensible degree, to separate the convolutions, distend the ventricles, or occupy a great part of the inferior occipital fossæ: this he did not detect in one of the thirty-eight bodies. The spinal marrow, examined in a considerable number of cases, never presented any sensible alteration. In two other subjects, who succumbed under a group of ataxo-adynamic symptoms, of a marked character, the semilunar ganglion was found of remarkable redness, which seemed to be produced by a very high injection of the cellular tissue, interposed between the small grains which compose this ganglion. One of these subjects presented, during the last twenty-four hours of his existence, a violent trismus, and a rigidity of the thoracic extremities.

Finally, M. Andral has often found the muscles black and livid; sometimes the muscles of different parts of the body appeared to him to have undergone, in less than five days, a real atrophy in their fibres. [*]

Laennec admits that in the essential fevers a slight degree of peripneumony, a sanguine afflux to the lungs, or at least, a catarrh, which engorges with mucosities the bronchial ramifications, a redness and thickening of their internal membrane, are local affections of at least equal frequency with the thickening and ulceration of the mucous membrane of the intestines. [†] The softening and the violet colour of the heart are observed, especially in the grave essential fevers, says this author, and particularly in those which present the group of symptoms described by Pinel under the name of adynamic fever; [‡] this is peculiarly the case where they present in a very marked manner the symptoms which were regarded by the ancients as indicating putrescency; viz. a livid tumefaction of the face, a softening of the lips, the gums, and generally of the internal membrane of the mouth, a sordid coating of the tongue and gums, an earthy aspect of the skin, meteorism of the belly, and very fetid dejections. "I would not dare," says he, "to assert that softening of the heart occurs in all essential fevers—yet I have never failed to observe it when I have directed my attention to the fact. Can it be the cause of the frequency of the pulse which is so

* Clinique Medicale, 1, 402.   † Ausc. Med. 1, 2.
‡ Ibid, p. 287.

often observed, and which sometimes continues many weeks, although the patient recovers his strength and embonpoint."*

"For a long time I have seen with astonishment," says M. Ribes, "that the symptoms of adynamic fever and all the functional disturbance observed during its course, have been attributed to certain inflamed points of the intestinal canal—I cannot believe that a cause so slight can give rise to such disorders, especially when I reflect that in strangulated hernia, with inflammation of a great extent of the intestines, and sometimes of the stomach, the patient often recovers, even when the inflammation of the strangulated part terminates in gangrene. After having for a long time endeavoured in vain to account for the difference in these two states, I examined the solar plexus and the nervous fasciculi derived from it. I think I observed in some cases that the nervous filaments which compose these fasciculi, were a little red, but more frequently, although there is no doubt that these nerves are affected in this disease, I was unable to recognise any change in their colour; it then appeared to me that other organs should be found affected—I turned my attention to the arteries which are distributed to the alimentary canal. Commencing with the cœliac trunk, I passed thence in succession to the superior and inferior mesenteric arteries—I examined them throughout the whole extent of the ramifications which could be opened, and I never found an alteration of sufficient consequence to account for the symptoms of this disease   But the case was different when I directed my attention to the veins. In almost all the subjects who had died of adynamic fever, I found traces of inflammation in the trunk and branches of the ventral portion of the vena portarum, and sometimes also in the hepatic portion of this vein, extending even to the right ventricle and auricle of the heart. I had so often found the veins inflamed in the case under consideration, that in 1816 I thought myself authorized to announce that the veins and the venous blood were principally affected in adynamic fever. We meet, it is true, with subjects in whom the inflammation of the veins is but slightly marked; but we know with what rapidity such marks are effaced by death. If we examine the part affected

* Ausc. Med. 1, 2.

with erysipelas in subjects who have died of this disease, al-
most all traces of inflammation have disappeared: the same thing
occurs in inflammation of the veins; but yet, however slight it
may have been, the practitioner at all accustomed to the exami-
nation of bodies, and to observe this kind of cases, will not be
deceived, but will readily discover whether there has been in-
flammation in the vein. Thus, it is proved to my satisfaction
that in individuals who have died of adynamic fever, however
slight in appearance may have been the inflammation of the
intestines, there is always inflammation in the ventral vena por-
tarum. After these remarks, it will be seen that in enteritis
and gastro-enteritis, if the irritation and inflammation of these
parts extend to the liver, it is not only through the ductus
choledochus; the ventral and hepatic vena portarum appears to
be the principal means of transmission.

We perceive that M. Andral has discovered after fevers, the
alterations I have pointed out, that he entertains the opinions
which I am desirous of circulating, because I believe them based
upon truth. The difference of sentiment which seems to exist
between us, on many points, is rather apparent than real. Laen-
nec contributes to prove, without desiring it, that there is no
essential fever without organic alteration. M. Ribes adds to
the mass of proofs, the results of his interesting researches in
pathological anatomy. Numerous remarks might be made on
the reflections made by these authors upon the facts which they
report, but after the detailed method in which the subject has
been treated, it would be paying but a poor compliment to the
intelligence of the reader, to enter upon such a controversy. If
what is asserted by Laennec, and MM. Ribes and Bouillaud, be
verified, if the contradiction which appears in some of these as-
sertions should disappear, the science would be enriched with
new facts; but it would not on this account undergo any funda-
mental modification: should it be established, that one or two
organs in addition, are inflamed in adynamic fever, it would
produce no change in what is already demonstrated, with regard
to the nature of the lesion which constitutes it; it would only
show that the seat of the disease was more extended, and its dan-
gerous character surprising.*

* See, on the pathological anatomy of the digestive apparatus; Chaussier,

In the second edition of his Clinique, M. Andral concludes
from his anatomical researches that, in the continued pyrexiæ
which constitute the various morbid groups, designated in the
nosography of Pinel, by the name of *essential fever*, lesions of
the digestive canal are not constantly found after death.   He
adds, that in these diseases, we find in 98 cases out of 100, le-
sions in the digestive tube.   This fact impressed him so strong-
ly, that he at last ranked fevers among the diseases of the abdo-
minal organs. The alterations were not found of equal frequency
in the different parts of the digestive tube.   He found the
stomach sound in a considerable number of patients, however
great had been the violence of the disease.   The alterations
found in the viscera seemed to him to possess nothing special,
nothing which could constitute their anatomical character, be-
cause they did not differ from those discovered in individuals

Bulletin des Sciences Medicales du Department de l'Eure, n. 53; Gerard,
Des Perforations Spontanees de l'Estomac, Paris, an. xii; J. Cloquet *sur les
Perforations Intestinales* dans le *Nouveau Journal de Medicine,* i. 107; E.
Legallois *Plusieurs Perforations du Canal Intestinal et Specialment des
gros Intestines, a la Suite d'une Affection Tuberculeuse, Arch. Gen. de Me-
dicine,* vi. 68; Louis, *Du Ramollissement avec Amincissement et de la De-
struction de la Membrane Muqueuse de l'Estomac, et Observations relative
aux Perforations Spontanees de l'Intestin grele,* meme recueil, i. 17, v. 5;
U. Coste, *Observations sur les Perforations de l'Estomac dans le Journal
Universel des Sciences Medicales,* xxix. 257; D. Coutetten, *Recherches de-
monstrant le rapport qui existe entre l'Irritation de la Membrane Muqueuse
du Canal Digestive, et celle de la meningine,* meme recueil, xxviii. 257; L.
Senn, *Sur l'Anatomie Pathologique du Canal Digestive,* meme recuiel; Rous-
seau, *Memoire sur la Membrane Muqueuse Gastro-Intestinale,* dans *Archiv.
de Med.,* vi. 484; A. Boulland, *Recherches sur les Characteres Anatomiques de
l'Inflammation,* 1824, in 4to; C. Billard, *de la Membrane Muqueuse Gastro-
Intestinale, dans l'etat sain et dans l'etat Inflammatoire,* 1825, in 8vo; F. Va-
quie, Memoire sur les traces *d'Inflammation dans les Visceres Abdominaux
apres les Fievres Putride et Ataxique,* dans le *Journ. Compl. du Dict. des Sc.
Med.* xxii. 3, 290; J. Cruveilheir, *Anatomie Pathologique du corps humain,
avec des figures coloriees,* 1830, in fol. (livrais. 4, 7, et 10;) Andral, *Clinique
Precis d'Anatomie Pathologique;* Carswell, *Recherches sur la Dissolution
Chemique ou Digestion des parois de l'Estomac, apres la Mort;* dans le
Journ. Hebdom. de Med. 1830, vii. pag. 321 et 505.   This article, the au-
thor of which makes great pretensions, is only a fond recapitulation of cer-
tain experiments upon animals subjected to conditions which are not those
which conduce to the production of fever.

who had died of any other disease, whether acute or chronic; because they are found with nearly equal frequency in those who die during a continued fever, and those who are cut off by other diseases. Whence he concludes, that every fever called essential, is not necessarily the product of a gastritis, and that the traces of gastritis detected upon opening bodies, cannot satisfactorily account for the diverse morbid groups, called *essential fevers*. Before considering an inflammatory state of the stomach as constituting these maladies, he thinks it proper to deduct from what may be considered as marks of an inflammatory state, the diverse alterations which may be due to some other cause than irritation, and of which many occur after death. We shall then find, according to this author, that the number of cases in which we refer the fever to a gastric phlogosis, becomes less considerable than we should suppose.

M. Andral, in the endeavour to confine himself within the limits of facts, has evidently gone too far in ranking fevers among the diseases of the abdominal organs. I do not think, that if we include among essential fevers, those which were formerly called *ataxic*, we shall in ninety-eight cases out of a hundred, discover lesions in the digestive tube. But he is right when he asserts that the stomach does not always present morbid traces after fever; we should, however, be cautious not to consider as post mortem changes the inflammatory redness which is frequently misunderstood from the fear of seeing traces of gastritis where it has not existed.

There is not, say they, any thing special in the traces which the digestive organs present after death, nothing which can assign a peculiar anatomical character to these fevers. M. Andral is right, and this is one of the strongest proofs that fevers are not special essential diseases. We cannot be surprised that the same organic lesion exists in one subject with, in another without, reaction or languor of the circulatory system. There is scarcely any alteration of tissue which constantly corresponds to a particular symptom or alteration of function.

Moreover, if the morbid traces of the organs are not peculiar to the groups of symptoms called *essential fevers*, we cannot be astonished if they do not correspond specially to any among them.

Finally, we must, doubtless, avoid regarding as a result of the inflammatory state, whatever is derived from another source— but this is a consummation which the future alone can realize, if it be true, that inflammation may exist without connexion with another morbid state affecting the part which it occupies.

"With regard to the small intestine," says M. Andral, "morbid changes in it are observed more frequently in proportion as we examine it nearer its union with the great intestine. But, he assures us he has very rarely found the duodenum affected: this appears to me to be the result of his attaching too little importance to lesions, the value of which, M. Broussais has demonstrated. M. Andral has seldom found the small intestine sound. Sometimes he has observed the follicles of Brunner more apparent than usual, and marked with grayish points at their orifices, which, according to him, were the product of a morbid state anterior to death, and which, at the period of death, was on the decline. At other times, in place of the morbid patches, the mucous membrane was found thinner than in the intermediate points: this membrane he considered a new formation, occupying the place of the cicatrized ulcers. These two opinions do not as yet appear to me well established. Both seem wanting in direct proofs, which the opening of diseased animals alone can furnish. The second is opposed by the excessive and uniform thinness of almost the whole extent of the small intestine, after a great number of adynamic fevers. A fact, which I have frequently verified in the hospitals of Val de Grace, and Gros-Caillou.

It has been remarked, that the vascular injection of the small intestine does not take place always in the mucous membrane, properly so called: it is sometimes confined to the villosities of this membrane. The justice of this observation, made by M. Scoutetten, and which has induced him to distinguish enteritis into membranous and follicular, has been established by M. Andral.

MM. Petit and Serres, pointed out this morbid development of the follicles of the intestines, in 1813, and M. Andral, in describing this alteration in the first edition of his Clinique, mentioned his predecessors and gave to this appearance the name of *intestinal exanthem.* MM. Bretonneau and Louis, have since

made it the subject of special research. The physician of Tours assigns the name of dothinenterie, or furoncular disease of the intestine, to this affection of the follicles, which he considers as a peculiar malady, *sui generis*. M. Louis, desirous of a word expressive of the anatomical character, without being disagreeable to the ear, gives it the name of the *typhoïd affection.**

He regards it as an acute disease, accompanied with a febrile movement, more or less intense, variable in its duration; peculiar to young subjects, particularly to those who have been for a short time exposed to the influence of new circumstances; it makes its appearance with a violent rigor, anorexia, thirst, and in a great majority of cases, with colic and diarrhœa; it is in a short time accompanied with a debility, out of proportion to the other symptoms, and, after a variable period, with somnolence, stupor, delirium, meteorism, sudamina, lenticular, rosy spots, eschars on the sacrum, ulcerations of the skin, of various depths, succeeding the application of blisters, deafness, spasmodic movements, a permanent contraction of the limbs; symptoms, of which some are transient and others increase generally in a progressive manner, till the fatal termination; or to diminish more or less rapidly, to disappear entirely at last, if the affection have a happy issue. The anatomical character of the affection consists in a special alteration of the elliptical folds of the ilium, or of the Glandulæ Peyeri.

In fifty subjects, who died after having presented these symptoms, M. Louis always observed the folds more or less deeply altered, in an extent varying from one to eight feet, softened, thickened, red or bluish, ulcerated or not ulcerated, and in many of them there was no other lesion of the intestinal canal. He has never observed these alterations in subjects who presented other symptoms, except in a single instance, when death occurred after prostration, and three of the intestinal folds were found red, and somewhat thickened.

He asserts that these symptoms and these alterations united, constitute a disease, *sui generis;* to which have been assigned

* Recherches Anatomiques, Pathologiques et Therapeutics sur les Maladie, connue sous les noms de Gastro-Enterite, Fievre Putride, Adynamique, Ataxique, Typhoïde, &c., considerée dans ses rapports avec les autres Affections Aiguës. Paris, 1829, tome 2, in 8vo.

the names of putrid, adynamic, ataxic, and typhoid fever, and of
gastro-enteritis, and which differs from enteritis, properly so
called, more than pulmonary catarrh differs from peripneumonia,
and rubeola from variola.

Let us remark, in the first place, that M. Louis reports a fact
which forms an exception to the rule which he lays down. Let
us then examine upon what grounds he decides that vascular bo-
dies, tumefied, red, and ulcerated after death, have not been in-
flamed during life. Whilst a third part of the patients affected
with typhus fever perish, enteritis in its acute form, according to
M. Louis, attacking healthy subjects, is so rarely fatal, that it
would be difficult to point out its seat with much precision, were
it not very often found in those who die of other acute af-
fections.

MM. Andral and Bouillaud deny that this special alteration of
the elliptical folds has not been observed except after the symp-
toms which M. Louis gives as signs of the alteration. I could
add my testimony to theirs upon this subject, but M. Louis
would, perhaps, be ready to say that his researches having been
of more recent date than mine, I may have overlooked what ap-
pears to have entirely absorbed his attention. Yet I shall not
hesitate to call the attention of practitioners to this point, which
has now become important: for the question is, whether M. Louis
is authorized in making of all fevers accompanied with prostra-
tion and somnolence, so many diseases, not of the intestines ge-
nerally, but of the small intestine; and still farther, so many
cases of tumefaction with redness, and of ulceration without in-
flammation.

What shall we say of the other differences, which he thinks
he perceives between acute enteritis and the typhoid affection.
According to him the latter commences with a febrile movement,
generally intense, and soon accompanied with loss of strength,
in a greater degree than corresponds with the other symptoms,
with somnolence, stupor, delirium and eruptions; the conva-
lescence is always tedious. The former, on the contrary, is ge-
nerally accompanied by only a slight febrile movement—a loss
of strength, which is inconsiderable, or only proportioned to the
abundance of the alvine evacuations; somnolence is extremely
rare, and bears a relation to debility, and is never comparable to

that which occurs in the typhoid affection; there is commonly no eruption, &c.: when the patient does not perish, convalescence is rapid.

To what does this parallel amount, except to this; that the more serious the enteritis is, the more marked are its symptoms, and the more considerable the number of sympathetic phenomena?

Are we hence to conclude that the researches of M. Louis are devoid of utility? No, this is never the case with researches so laborious. They have an importance which he has not suspected, an importance much superior to that which he ascribes to them. He has the honour of having established the very frequent coincidence of certain alterations, which inflammation determines in the small intestine, with the symptoms given before the researches of MM. Prost and Broussais, as the signs of putrid, adynamic and ataxic fever, that is, of the diseases which were considered general; M. Louis has, therefore, done much towards the localization of febrile disease; and, if there be some danger of being led by him into error, with regard to the nature of these diseases, he has at least thrown light upon the subject of their seat. We should be authorized in concluding, from his dissections, that adynamic fever is more frequently an enteritis than a gastro-enteritis, had he not too lightly estimated the gastro-intestinal redness.

In giving to the disease called by M. Louis the typhoid affection, the name of *iliodicliditis,* M. Bally has come nearer to the truth; but the denomination of follicular enteritis, employed by MM. Billard* and Cruveilheir† appears preferable to any other.

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* *Traite des Enfants Nouveau-nes et a la Mamelle fonde sur de Nouvelles Observations Cliniques et d'Anatomie Pathologique.* Paris, 1828; in 8vo.

† *Anatome Pathologique des Cords Humain, ou,* Description et Figures coloriées des diverses alterations Morbides. Paris, 1830; grand in fol. (7e livraison.) In four plates of remarkable accuracy, M. Cruveilheir has represented the varieties of alteration occurring in the small intestine. I would call the attention of my readers, and particularly of physicians who possess but limited opportunity for post mortem examination, to this work, remarkable for the exactness of the descriptions and of the drawings.

Treatment of Adynamic Fever.

Hitherto I have said nothing on the prognosis of adynamic fever, because it depends so intimately on the influence of treatment, that it cannot be properly discussed before it. Adynamic fever has been classed among diseases of the most fatal character, on account of the great number of patients who die when a tonic treatment is employed; yet this has not prevented these means being considered as the only appropriate remedy. An important remark, and one which throws some light upon the question I am about to examine, is, that as long as the tonic treatment was generally employed, its inefficacy in most cases was complained of; whilst, as soon as a different treatment was proposed, the efficacy of tonics was declared, in the loudest terms. Whence this contradiction? Its source may without difficulty be discovered in the human heart; but it is sufficient to remark, that unprejudiced physicians, strangers to all sectarian feeling, admit the inutility of tonics in most adynamic fevers. It is for this same reason, that the most respectable authors have insisted on the necessity of these means, the instant the slightest symptom of adynamy appeared. This advice is judicious: too much could not be done to prevent a disease which is so rarely cured. The language of Pinel is: " These fevers *often* terminate fatally."* I do not fear to affirm, after ten years of observation, in France, Spain, Germany, and Hungary, that the average of subjects who die of adynamic fever, sporadic or epidemic, when tonics are employed, is to the number of subjects attacked as three to four: let it be clearly understood; that we are not here treating of that chimerical disease, called essential adynamic fever, but of gastric or mucous fevers, of manifest inflammations, with symptoms of apparent debility, to which has been given the name of adynamic or typhoid fever, simple or complicated, in a great measure according to the caprice of the observer.

We have no exact data with regard to the mortality of adynamic fever, abandoned to nature, because, in the absence of medical aid, the patients are too often gorged with wine and

* Nos. Phil., tome 1, p. 175.

other stimulating drinks. However, from an attentive observa-
tion of our army hospitals, we may be assured that the use of
cinchona has not diminished the number of fatal cases. What
physician or surgeon has not seen men attacked with this for-
midable adynamic fever, when placed in wagons to avoid the ene-
my become convalescent during the journey, without having had
recourse to medicines. I could easily mention the names of many
surgeons, who have in this manner recovered their health, were
not these facts too generally known to render it necessary to
prove them. I myself escaped the danger of a gastro-enteritis
with adynamic symptoms, without having taken unless during
convalescence, the tonic potions which were prescribed for me
by a practitioner of reputation.

Among the patients treated by tonics who recover from ady-
namic fever, there are certainly some, who are cured, notwith-
standing these means, and not by them. The symptoms very
seldom become promptly meliorated; the signs of weakness ge-
nerally augment in intensity: in the most happy cases, the dis-
ease grows worse for many days, or even during one or two
weeks, until, at last, the symptoms diminish gradually, and the
patient recovers from his prostration. Is it not reasonable to
suppose, that if tonics were appropriate to the nature of the dis-
ease, we should more frequently observe a rapid improvement
under their employment, as is generally the case under the anti-
phlogistic treatment?

The tonic treatment and the emetic, which have been recom-
mended against the adynamic fever, are decidedly contra-indi-
cated, 1st, by the nature of the causes of this disease, which ge-
nerally act by stimulating the internal organs, and particularly
the digestive organs: 2dly, by the supposed nature of the causes
which, if they indeed debilitate, would preclude the use of eva-
cuants; 3dly, by the symptoms, which announce in almost every
case the inflammation of an important viscus, and generally of
the digestive passages themselves, thus contra-indicating at once
both emetics and tonics; 4thly, by the well known nature of sy-
nochal, bilious, gastric or mucous fevers, the symptoms of which
almost always precede or accompany those of adynamic fever;
5thly, by the traces of phlegmasia, which are found in most sub-
jects after this fever, generally in the digestive organs, and

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sometimes also in other organs; 6thly, finally, by the unhappy consequences resulting from the employment of tonics and eme- tics in the greater number of cases.

How has it happened that for so long a period opinions derived solely from theory, should have confined the practice to means possessed of so little efficacy? I assert that the tonic treatment was adopted solely on account of theoretic views, and it is easy to demonstrate the assertion.   In the first place, it is very evi- dent that their employment is persevered in, not on account of any advantage derived from them: in the second place, to show that I assume nothing which cannot be proved, it will be suffi- cient to cite the following passage.   " In the fevers called putrid, where the vital power is diminished and the actions dependent upon it much weakened, the heart is incapable of disembarrass- ing itself of the blood which accumulates in it, and the quantity of which, irritates it so much as to permit only small and frequent contractions, as in the cold stage of intermittent fever.   In this case the same spasm and paleness continue without intermission; the extraordinary stupor and the *weight* of the muscular parts which the *diminution of the vital principle,* occasions, op- pose an obstacle to the propulsive force of the heart and to the *propagation* of the movement of the blood.   To restore their accustomed vigour to the contractions of the heart, we are com- pelled to obviate its debility by the employment of tonic stimu- lants, which may solicit it to fulfil its functions or excite the vi- tal energy which is prostrated."*   I entirely misapprehend this passage, or Pinel has advised the tonic treatment from views entirely theoretic, and, what is more remarkable, after a theory drawn from the writings of Boerhaave and his verbose commen- tator.   Since it is not experience which has caused the adoption of the tonic practice in adynamic fever, but merely reasonings founded solely upon an erroneous idea of the nature of this fever, since tonics have been given only because this fever was attri- buted to weakness as the humoralists had given them because they attributed the disease to putrescency; finally, since experi- ence demonstrates that this treatment is possessed of so little ef- ficacy, what plausible motive does there remain to continue it?

* Nos. Phil., tome. I, p. 121.

Were there no other motives, these would be sufficient for its abandonment.

But, farther, the employment of tonic remedies in the disease of which we are treating is not only based upon an erroneous theory, it is not only useless in a great number of cases; it is dangerous, even fatal, in the greater number.

Let the practitioner at this moment call to mind all the cases of adynamic fever, which he has observed, and let him say whether he has not, in almost every instance, seen the adynamic symptoms become aggravated immediately after the administration of tonics, even when the disease has not terminated fatally; let him say whether in most cases, where he has proceeded to the exhibition of tonics, immediately upon the slightest appearance of adynamic symptoms, he has not seen the whole series of symptoms of this nature rapidly and almost suddenly supervene. Finally, let him compare the number of cures with the number of deaths in his practice, and let him say with frankness whether the author of the *History of Chronic Phlegmasiæ* was deserving of contempt when he announced* a mode of treatment, more efficacious than the method generally employed until that period.

For a long time, it is true, the danger of tonics, in many cases, and their inutility in others had been recognised: many celebrated physicians, among whom may be mentioned Potalli, Gui Patin, Hecquet, Chirac, Baglivi, Van Swieten, Dehaen, Sydenham, Huxham, and Stoll, had limited the number of cases in which these means are indicated. They recognised the superior utility, in some cases, of antiphlogistics, or at least considered it proper to commence the treatment with them. But though we must admit the sagacity of these physicians, in presuming, simply by the inspection of the symptoms, what post mortem observation has since demonstrated, and what clinical observation of the antiphlogistic treatment has placed beyond all doubt, we must yet confess that their remarks were entirely lost upon their cotemporaries and upon posterity, because they themselves had not proceeded sufficiently far. Brown afterwards entirely deserted the path of experience; and his doctrine, since reproduced under

* Premier Examen des Doctrines Medicales. Paris, 1816; in 8vo.

different terms, has conduced to the administration of tonics in all fevers with prostration of muscular force. A first and uncertain step was taken in Italy, by MM. Rasori and Tommasini,[*] towards a melioration which had become very necessary; but it is in France, and by M. Broussais, that the problem of the nature of adynamic fever has been decidedly solved; and the treatment of this fever has since then reposed upon a solid foundation, although many researches remain to be made with regard to the modifications it should undergo in certain cases.

It is in this spirit that I proceed to an exposition of the principles, which should direct us in the choice of means proper for the prevention or cure of adynamic fever. These principles differ little from those professed by M. Broussais: their difference, however, is such as to render it proper to call the attention of practitioners to the subject, that they may decide whether I have approached nearer to the truth, or receded from it.

The inefficacy of tonics in adynamic fever had induced physicians to seek the means of preventing the development of the disease, rather than those of curing it. But, instead of endeavouring to perfect the treatment of the diseases of which adynamic fever is always, to use their own language, either the complication or the termination, they have only recommended certain precautions, of public or private hygeine, with the hope of rendering this fever less common. Here, again, theory exerts a prejudicial influence over experience, by giving it a false direction. Since adynamic fever is never primitive, (a fact which must be true, since there is no longer any difference of opinion upon the subject,) the first care, with a view of preventing the development of the fever, should be to prevent the diseases which bring it in their train, or to arrest their progress.

Wholesome food, sobriety, moderate exercise, firmness in misfortune and public calamity, cleanliness of clothing and of apartments, are, in a general manner, the conditions most proper for preventing the development of the fevers, which, after a very short continuance, or even suddenly, present adynamic symptoms in union with those which characterize them. But the indigent, the soldier, the inhabitants of a besieged town, of a ves-

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* Dell' Infiammazione e della Febre continua. Pisa, 1826-7. 2 vols. in 8vo.

sel, a prison, or a hospital, cannot place themselves in favourable circumstances, nor, in most cases, withdraw themselves from unfavourable ones.

It is the duty, therefore, of governments to ensure a permanent supply of provisions, and provide for the salubrity of towns and public habitations, by cleanliness and the means of disinfection: instructions should be published indicating the necessary precautions, and facilitating their employment.

The attention of the authorities should be directed to the following particulars; viz.

1. The distribution of clothing, food, and fuel among the poor; a rigid examination of the substances destined for the magazines and markets. 2. The opening of large temporary hospitals, out of the city, if circumstances permit it, when the permanent hospitals are insufficient, or when they are crowded; with a view to have as few of the sick as possible in the houses of the town.*
3. Care should be taken not to crowd the sick together, and to keep them separated as far as possible from each other. 4. The ventilation of the wards of the hospitals, and the disengagement of chlorine in their establishments, as also in vessels, arsenals, barracks, and in private houses, in which the sick reside. 5. Proclamations should be made, with a view to allay public alarm with regard to the danger, which is always exaggerated by fear and malevolence.

Such are the principal subjects to which the attention of government should be directed, under circumstances capable of favouring the development of diseases ranked among epidemic adynamic fevers.

With a view to the prevention of adynamic fever, it has been recommended, 1st, not to bleed, or to bleed but little in inflammatory fever; 2dly, to provoke vomiting in gastric or mucous fever; 3dly, to resort to tonics whenever the first appearance of prostration is perceived.

Experience demonstrates, that inflammatory fever never becomes adynamic in consequence of venesection, unless when it is the consequence of gastro-enteritis, which rarely diminishes

* Adynamic epidemics developing themselves in ships are the more fatal and difficult to remedy, from the impossibility of entirely isolating those in health, and separating the patients from one another.

under the influence of venesection. But, in this case, prostration supervenes, not because it has been abstracted, but because it has been taken suddenly from a vein; because the circulatory apparatus has been suddenly emptied, instead of the blood being gradually abstracted from the part nearest the seat of inflammation. Whenever the inflammatory fever is not in consequence of gastro-enteritis, or at least when the inflammation does not predominate, venesection is preferable, and there is no physician who has not seen the symptoms of a pretended adynamic fever disappear as the blood flowed. The abstraction of blood, then, regulated by the seat of the phlegmasia which gives rise to the symptoms of inflammatory fever, and proportioned to the degree of this phlegmasia, constitutes, with the rest of the antiphlogistic treatment, the best means to prevent the appearance of the adynamic symptoms.

2. I have already insisted upon the danger of an injudicious exhibition of emetics in gastric and mucous fevers; it has been demonstrated that the nature and seat of the phlegmasia, constituting these diseases, contra-indicates the employment of these means, and require, on the contrary, the methodical employment of topical blood-letting in almost every case. What I have named *humid or putrid adynamic fever*, being always the highest degree of gastric, bilious, or mucous fever, an emetic, far from preventing the development of adynamic fever, is, on the contrary, the most certain means of favouring its development. This is also frequently the case in sporadic gastric, or mucous fever, and almost always in those fevers when they are epidemic. What practitioner has not seen adynamic symptoms immediately follow the administration of an emetic in most of these diseases?—It is useless to cite cases in which this means has prevented the development of adynamy; this happy result is very unfrequent, since adynamy is frequent after these fevers, and when it is supposed that it has been prevented, what proof is there that it would have occurred? Shall it be said that the nature of the epidemic proves it? One of the most dangerous errors in medicine, certainly, is the desire to treat all patients in the same manner, in a certain district, in a certain country, owing solely to the fact that among a multitude of prevailing diseases, one or more extensively spread than the rest.

I have a thousand times witnessed the administration of eme-
tics in epidemic adynamic fever. I have myself administered
them very often, and when they have not been hurtful. I have
not seen them dissipate even the simple prostration which ac-
companies all acute diseases. I have never witnessed the disap-
pearance, after an emetic, of the intense symptoms which I
have reported on the authority of Pinel at the commencement
of this chapter. On the contrary, these symptoms have almost
always increased, and the patients have always perished when
these means have been persisted in. Let those who have wit-
nessed a different result declare the fact, and it will then only
remain to establish the comparative frequency of these two or-
ders of facts: as to myself I can only relate what I have wit-
nessed, and unhappily I have had too many opportunities of ob-
serving epidemic adynamic fever.

If the number of cases in which an emetic is proper be limit-
ed to those in which there is not gastric or mucous fever, but a
surcharge of the primæ viæ, we must in the first place recognise
that an emetic is not indicated by the adynamic symptoms. In
the second place, if experience proves that the symptoms of this
pretended surcharge are ordinarily only those of gastritis, duo-
denitis, or hepatitis, of little intensity, but capable of being ex-
asperated, under the influence of an emetic; finally, if the ex-
acerbation of the gastro-enteritis be more to be feared under the
circumstances which favour the manifestation of the adynamic
symptoms, is it not reasonable to conclude, that if there are
cases in which an emetic may be prescribed with impunity, with
a view to dissipate bilious or mucous symptoms, this means
should always be rejected when there is cause to apprehend ady-
namy?

A decisive fact is the rare occurrence of adynamic fever in
the establishments in which fever is treated by the local abstrac-
tion of blood and other antiphlogistic means. To believe this
fact I am aware we must witness it. Now, since physicians
cannot leave their patients to follow the practice of their bre
thren, let them, at least for the moment, adopt the antiphlogis-
tic method; let them direct it according to the principles of a
sound physiology, which derives daily confirmation from the
experience of physicians whose good faith and intelligence there

is no reason to doubt; let them employ this method with firm-
ness and not in a timid and vacillating manner, and they will
soon acquiesce in our opinion on the subject.   I consider it in-
cumbent upon me to declare in this place how much profit I
have derived from witnessing the practice of M. Broussais.   It
was not in his course of lectures, that I studied his principles of
treatment.   I have only followed the lessons which he gave at
the bed-side of the patient, and it was there particularly that I
became convinced that the antiphlogistic treatment is the best
calculated to prevent adynamic symptoms.

It is only at the bed-side of the patient that we can form
an unprejudiced judgment of those who propagate new doc-
trines.

Whenever I cite the therapeutic method of M. Broussais, I
speak of that which he pursued previously to 1816, and not of
that which he may have adopted since that period.

There is a degree of intensity which bids defiance to all the-
rapeutic means; but the occasional failure of a particular mode
of treatment does not authorize its rejection.   If emetics and to-
nics are at the present day justly opposed as remedial measures
in adynamic fever, the opposition to them does not arise from
the fact that they do not always cure, but from the circumstance
of death occurring in most cases, notwithstanding their employ-
ment, and farther, from the consideration that they often
hasten the appearance and favour the progress of what has hi-
therto been named adynamy.   Since, on the contrary, this ady-
namy occurs but rarely in the course of gastro-enteritis and
other phlegmasiæ under the influence of antiphlogistic measures,
we must not regret the latter, because they do not always pre-
vent the disease, nor cure it when it manifests itself: a sufficient
cause for preferring these measures is found in the fact, that the
number of cases preponderates in which they arrest incipient or
cure confirmed adynamy.   Let us now consider the treatment
proper in cases of manifest adynamy.

When under the influence of powerful causes, or a very strong
predisposition, usually in consequence of aggravating circum-
stances, such as errors in diet, and the employment of tonics and
stimulants, the leading adynamic symptoms manifest themselves,
such as smallness of pulse, stupor, prostration, supine decubitus,

must we commence the employment of antiphlogistics, if we have not hitherto employed them? and if we have already had recourse to them, must we continue their exhibition? Theory and experience unite in deciding these questions in the affirmative, since we every day observe the cessation of these symptoms under the antiphlogistic treatment, even when they have attained a high degree of intensity.

But the lessons of experience cannot be committed to paper; it is difficult to lay down general rules, because the cases to which they must be applied vary infinitely, and because a long period is certainly still to elapse before the point can be marked with precision, where we must desist from the farther employment of antiphlogistic measures, and especially of blood-letting. The consummation of our knowledge upon the subject, can only be affected by the publication of the experience of enlightened practitioners on this important point of therapeutics. Of all the parts of the new pyretological doctrine, this, doubtless, is the one, the perfecting of which is most worthy of our assiduous endeavours.

It is more easy to prevent adynamy, or to arrest it in its incipient stage, than to cure it after it is developed. Hitherto, the state of the pulse, of the muscular forces, and of the intellectual faculties, have exclusively occupied the attention of practitioners, and the indications were derived solely from these three sources: at the present day, the symptoms arising directly from the diseased organs, must be the chief objects of our attention. Thus when, notwithstanding a well directed antiphlogistic treatment, or when, under the influence of a tonic treatment, adynamy manifests itself, we must study with care the state of the gastric passages, of the liver, the uterus, in a word, of the organ primitively affected. If the local signs of the phlegmasia of this organ continue, we must persevere in the employment of antiphlogistic measures. The propriety of this plan was perceived, notwithstanding the darkness of their theories, by the physicians, who, from the time of Galen to that of Pringle and Bouvart, recommended blood-letting in putrid fevers, when they were accompanied with signs of excitement. This advice was too indefinite to subserve any useful purpose. Bleeding should not be prescribed in this vague manner: in the choice and continu-

ance of antiphlogistics we must be guided by the remarks which
have been made in the preceding chapters, concerning inflamma-
tory, gastric, or mucous fevers.   Thus, whatever be the adyna-
mic symptoms, the signs of cerebral congestion indicate the ap-
plication of leeches to the temples, or to the ankles—bleeding
from the foot, pediluvia and refrigerants to the head.   Oppres-
sion, frequency, and largeness of respiration, when joined to
fulness of the pulse, even when it is slow and, as it were, em-
barrassed, render it necessary to take blood from the arm; red-
ness of the edges of the tongue, its dryness, and sensibility,
manifesting itself by groans, cries, or involuntary movements,
when pressure is made upon the epigastrium, oblige us to repeat
the application of leeches to this part of the abdomen.   When
to the adynamic symptoms are joined diarrhœa, we must, in
most cases, apply leeches to the anus.   In a word, we must obey
the indications derived directly from the primitive phlegmasia,
as though the adynamic symptoms did not exist.

These remarks apply to the cases in which the signs of the
inflammation, which is the focus of all the symptoms, continue
to manifest themselves in the midst of the adynamic symptoms.
Here, let me repeat it, antiphlogistic measures are preferable,
and are alone appropriate to the nature of the disease.   Here,
there are no exceptions, and no other modifications than those
necessitated by the idiosyncracy of the subject, and the circum-
stances in which he is placed.

When the signs of local irritation have ceased, and the adyna-
mic symptoms continue alone, when the latter manifest them-
selves in a very alarming manner, and when we have no infor-
mation with regard to the commencement of the disease, what
conduct must we pursue?

When the signs of local irritation cease entirely, the adyna-
mic symptoms generally diminish in intensity.   It is then un-
necessary, and it might be prejudicial to persevere in the treat-
ment which has been adopted; the abstraction of blood should
then be discontinued, and, in proportion as the state of the pa-
tient becomes meliorated, we may change from a severer diet
and the use of emollient drinks, to light broths, and gradually
to a substantial regimen.   Let it be remembered, that even a
light broth given too soon, when adynamy has been the result

of gastro-enteritis, may occasion the sudden renewal of all the adynamic symptoms, or prolong the continuance of those which remain. This fact forms one of the strongest proofs in favour of the new views of the nature and seat of adynamic fever.

When, notwithstanding the diminution and even entire cessation of the symptoms of local irritation, those attributed to adynamy persist, we must not still renounce the hope of saving the patient, nor anxiously resort to the exhibition of tonics. Mild restoratives are in this case to be administered, and their result watched: if they appear to contribute to the disappearance of the adynamic symptoms, the more pleasant aromatic infusions may be prescribed with advantage; afterwards wine mixed with water, and, finally, mild bitters, when the tongue and stomach have returned to their natural state. This weakness almost always diminishes with rapidity, when the digestive passages properly perform their functions. It is only during convalescence, and when bitters are not disgusting to the patient, that we can prescribe them. The same remark may be made with regard to wine; we must consider the inclination of the patient: when he really has a desire for it, not occasioned merely by the wish to regain more rapidly his strength, this manifestation of the wants of nature must be attended to. Let it farther be remarked, that aromatic infusions, bitters and wine, cause the renewal of the adynamic symptoms when they are given too soon or too copiously.

If it be inquired at what period broths, and tonics may be given, I shall answer, that none but physicians who contemplate diseases only in the closet, endeavour to point out the days for the employment of particular remedies, except in the case of intermittents.

Let every physician become deeply impressed with the views which should regulate the treatment of adynamic fever, and he will soon acquire upon this subject the practical light which personal experience alone can give, and which cannot be communicated. On the whole, there is certainly greater danger in hastening the employment of nourishing articles and tonics, than in delaying too long their exhibition. When the physician is called to a patient who has been suddenly attacked with adynamic symptoms, with whose previous state he is unacquainted,

without attempting to obtain from him information which he is in-capable of giving, for I suppose him affected with a stupor which does not permit him to answer, and almost annihilates all evidence of sensibility, he must examine him with care, judge of the state of the brain from that of the conjunctiva and the nostrils, of that of the stomach from the tongue, the mouth, and the skin, and by the effect of pressure upon the epigastrium; of the intestines, by the existence of diarrhœa or constipation: these signs, silent witnesses of a profound but latent lesion, being examined with the greatest solicitude, our conduct must afterwards be regulated by the result of this examination.   The relative frequency of the irritations capable of giving rise to the adynamic symptoms and the different character impressed by each of them on these symp-toms, must be remembered.   The chances of success are in these cases less numerous, as our method of proceeding must be based, to a certain extent, upon presumptions and approximate calculations.   Precisely on account of the difficulties presented by such cases, is it important that they should not be abandoned to a blind empiricism, recommending the indiscriminate employ-ment of tonics.

Finally, and this is the point most necessary to be understood, what must be done when the face is cadaverous, the pulse small, slow, scarcely sensible, the skin cold, covered with a clammy sweat, generally diffused over the body, or at least affecting the upper parts, the body inert and completely abandoned to its own weight, the eyes dull, and, as it were, covered with dust, the conjunctiva injected with black blood, the nostrils colourless, the tongue devoid of redness, natural in aspect, without any coating, not dry, even pale, with the gums and the lips in the same state; finally, when, on pressing the epigastrium, the patient exhibits no signs of remaining sensibility? Certainly, if the tonic treatment be ever proper, it must be in such cases.   Every physician, on witnessing such a state, is tempted to have recourse to stimulants, and there are few who do not anxiously resort to them; nor can they be censured, for it is difficult to remain an inactive spectator of such a condition, and it is not diet or emol-lient drinks that can here avail.   But what advantage in general can we expect to derive from broth, bitters, quinine, the acetate of ammonia, camphor or ether?

Sometimes we observe a transient excitement of the heart; the pulse is accelerated without becoming fuller or stronger, the skin becomes hot and dry, the tongue also resumes the redness of the edges, and becomes dry, the patient groans when the epigastrium is pressed, or when he is moved: sometimes he opens his eyes, and seems to recognise those around him. But these favourable appearances soon cease, and the patient again sinks never to rise.

Tonics sometimes appear to dispel the stupor, reanimate the circulation, and restore the functions of the stomach. In this case the gastro-enteritis had ceased before the diminution of the adynamic symptoms. The inflammation, extinguished in the stomach and the commencement of the small intestines, existed only towards the termination of the latter; the cerebral irritation had not become irremediable; by stimulating the stomach, the equilibrium of action, without which life must cease, is reestablished between the encephalon and this viscus. Here tonics act as derivatives, and the result of the derivation is the reestablishment of cerebral action, as well as of that of the heart and stomach.

Unwilling to evince an uncompromising hostility to principles, when they do not involve any practical mischief, I am not averse to grant that in some adynamic fevers, the brain falls secondarily into a state of astheny, and that under these circumstances, bitters and aromatics applied to the stomach act directly as tonics. But it is very necessary to be fully aware of the danger inseparable from the premature employment of these means, of their inutility in most cases, and the absurdity of recommending their indiscriminate employment in all adynamic fevers and in all their stages.

In a word, I believe that the number of cases in which there is astheny of the brain and in which tonics are efficacious, is to the number of cases in which there is irritation of the viscus, and in which tonics are contra-indicated, as one to a hundred. I would ask those of my brethren who are tempted to condemn this proposition, to say whether they have had opportunities of observing several adynamic epidemics in different countries of the north and south, and whether they have methodically em-

ployed antiphlogistic measures in a great number of cases of this nature.

It will be observed, that, if I limit greatly the number of cases in which tonics may be useful in adynamic fever, I do not entirely banish them from the treatment. Perhaps, indeed, it will be found that I have not been sufficiently rigorous in limiting their employment. In a wide-spread epidemic, the physician of a hospital may visit one hundred patients every day; considering ten days the mean duration of the disease, he will see 300 in a month: according to my estimate, then, he will cure, during this period, three patients by tonics. I mean three patients who have arrived at the last stage of adynamy: now, every one knows, how limited is the number of recoveries from this condition. With regard to other cases, it is useless to repeat what has already been said with respect to the utility or disadvantage of tonics; but I should here remark, that the patients who escape both the dangers of the adynamic fever, and of tonics administered too soon, do not recover except after formidable symptoms, which sometimes continue for more than three weeks, and that they often retain chronic gastritis, known by the name of weakness of the stomach and generally treated as such, that is aggravated and perpetuated by the exhibition of the same tonics.

I think it unnecessary to dwell upon the manner in which tonics were formerly administered in adynamic fever, since I am persuaded that, when given in this manner, they cause the loss of the patient, or at least aggravate his danger and retard the cure. During convalescence they must be exhibited with extreme caution: the most feeble doses are the most efficacious; they favour the digestive process without renewing the irritation. The sulphate of quinine is in this respect a valuable medicine. I have employed it with success in the dose of a grain once, twice, three or four times a day, in convalescence from certain cases of gastroenteritis and arachnitis, which had been accompanied with symptoms of stupor, and required the repeated abstraction of blood.

The advantage derived from tonics in a small number of cases does not prove, as has been asserted, that adynamic fever is owing to debility; this advantage may be disputed: but, if it be admitted, nothing authorizes us to determine with regard to the

nature of a disease from the medicine which relieves it; thus I have not availed myself of the efficacy of antiphlogistic measures in adynamic fever, to prove its dependence upon inflammation.

This pretended proof falls to the ground, when we reflect that every day evinces the possibility of curing diseases of the same nature by remedial measures of totally opposite characters.

The state of the skin deserves particular attention in adynamic fever; it is to this tissue that we can without much danger, attempt to provoke a derivation, when the irritation is beginning to cease. If this measure does not always succeed, at least it should be tried in many cases, and its effects will sometimes be satisfactory.

All authors coincide in recommending an exceeding attention to cleanliness, as one of the most certain means of success in this fever. It is perhaps more necessary in these than in any other diseases, since the excrementitious particles, at the same time that they irritate the skin by their prolonged contact, may second the effects of pressure in causing the development of an inflammation, succeeded by gangrenous eschars, which generate gases, capable of adding to the danger of the patient by their introduction into the digestive and respiratory passages. Thus the greatest care should be taken, not only to renew frequently the air of the apartment and change the linen frequently, but also to wash the whole surface with a mixture of equal parts of hot water and vinegar. These lotions, which should be immediately succeeded by the application of very hot cloths, keep up the action of the skin, and diminish the acrid sensation it occasions, when touched; they are particularly useful when the skin is clayey and dry; we should not have recourse to them when the skin is burning; or if these lotions should then be prescribed they should be made with water of a mean temperature, which causes no sensation of either cold or heat.

In vain might we attempt to do more to cause a derivative irrition in this tissue, before the diminution of the primitive irritation: as long as the latter remains intense, it cannot yield to the development of an external irritation; all that can be done is to use dry frictions, conjointly with the lotions, and renew them several times a day when the skin is not very hot. But when

the local phenomena of inflammation of the digestive passages, of the lungs, the uterus, the peritoneum, the bladder, &c. have ceased, if not completely, at least in a great measure, we may employ baths, sinapisms and vesicatories.

Baths tend to dissipate the gastro-intestinal irritation and prepare the skin to receive the impression of rubefacients. They should be administered at a mean temperature. For some years past, many physicians of Paris, after the example of English, American, and Italian practitioners, have poured cold water upon the sick while in the most profound stupor. This bold proceeding has sometimes been justified by the successful result; that is to say, all the patients have not expired: sometimes even the circulatory and cerebral functions have resumed their activity to the great astonishment of the attendants, and the patient has recovered. Such instances of success, to which may be opposed so many cases of failure, have a greater tendency to increase the number of victims to the disease than to enrich the domain of therapeutics. This measure must be left to adventurous practitioners, whose whole life is a series of experiments upon the patient injudiciously committed to their charge.

Of all the means used with the view to establish an afflux to the skin, sinapisms are the most eligible. We have the advantage of provoking the swelling of the sub-cutaneous cellular tissue, and consequently of imitating the morbid fluctuating movement better with them than with vesicatories, and they have not, like the latter, the inconvenience of irritating sympathetically the urinary passages. They often produce good effects when they are not applied until the inflammation has declined; in general, they are not permitted to remain for a sufficient length of time; they should frequently be continued for five or six hours. They are generally applied to the feet or ankles: their action is rendered more prompt and durable by placing the feet in warm water for some minutes previously to applying them. Sinapisms sometimes determine vesication, and even inflammation of the subcutaneous cellular tissue; this inflammation may occasion a suppuration, which is not always devoid of danger: these bad effects, however, are not apt to occur when a sufficient quantity of blood has been abstracted before resorting to this revulsive measure.

Blisters, which most physicians consider it their duty to pre-
scribe as a matter of course in the last period of adynamic fever,
should be classed among the means established by custom rather
than those sanctioned by observation. Applied before the cessa-
tion of the principal local symptoms of inflammation, they are
injurious, particularly when the inflammation is seated in the
stomach and intestines.

Applied too late, they no longer produce the desired effect,
and may then be considered rather as means calculated to throw
light upon the issue of the disease than as remedial agents. It
is, however, far from being the case that the failure of rubefac-
tion is, as has been asserted, a certain sign of the approach of
death.

Sinapisms often effect what blisters are incapable of producing,
and, should a permanent effect be desired, we have only to pro-
long the time of their application, while it is often very difficult
to keep up the inflammation, produced by blisters, or at least
this can only be accomplished with much suffering. The time
is passed when it was thought that suppuration was more bene-
ficial than simple rubefaction prolonged or repeated.

We must in general beware of expecting too much from ru-
befactions in adynamic fever. When inflammation has disor-
ganized the tissues, in vain does it appear to become extinct: in
vain is the brain actively stimulated by the irritation of the skin;
its action ceases because an important viscus, to which it was in-
timately related, no longer fulfils its functions, and no longer acts
upon it. It is, under these circumstances, at least useless to resort
to the employment of fire, according to the advice of some
practitioners. At the present day such an experiment would be
more injudicious than formerly, since it has been proved by ac-
curate researches that a burn of the skin may determine a violent
gastro-enteritis. If we reflect that the inflammation of the parts
on which the body lies, such as the region of the sacrum and
great trochanters, never contributes to the restoration of the pa-
tient, we shall be induced to believe that an excessive inflamma-
tion occasioned by any other means and followed by eschars, can-
not be more advantageous.

When, notwithstanding the strictest cleanliness and other pre-
cautions against the formation of eschars, we observe the com-
mencement of inflammation from pressure, we must, as far as

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possible, place the patient in the most favourable position, and wash the irritated parts with a solution of acetate of lead. If an eschar forms, emollient applications are proper, and if the inflammation necessary for the healing of the ulcer be wanting, the part should be dressed with lint, covered with an irritating ointment. From the occasional necessity of resorting to this method to hasten the cure of these ulcers, it has been concluded, that ulcers of the intestines might equally require the internal use of tonics. This is a mere presumption, to which, I think, sufficient deference is paid, when we allow our patients to use mild tonics during convalescence, when they decidedly crave them, and not in obedience to the Brunonian theories.

The genius of sympathetic medicine has found a fertile field for its display in the treatment of adynamic fever. When both the seat and nature of these diseases were unknown, it was natural to combat each of the symptoms separately, or, at least, it was hardly possible to proceed in any other manner. At the present day, the treatment should be directed exclusively against the primitive lesion. When this plan is pursued, that insupportable dryness of the mouth is not observed which torments patients treated by tonics; it is, however, sometimes proper to moisten their lips with the juice of an orange, or some other acescent fruit. Retention or suppression of urine is seldom observed under the antiphlogistic treatment: if the former take place, we must practise catheterism several times a day, but beware of leaving the instrument in the urethra and bladder, as is often done; as this might occasion cystitis, or augment it if it already existed, and thus add to the disorder of the viscera. Cold drinks copiously taken, when the state of the stomach permits it, are sufficient to remedy the irritation of the kidneys; nevertheless, when it is considerable, it is proper to apply leeches to the loins or perineum. Constipation should never be combatted by purgatives, or even by laxations in adynamic fever; it ceases with the irritation: it is only proper to prescribe lavements to evacuate the great intestine. Diarrhœa requires only the same measures as the irritation, of which it is the symptom; it is much more common when tonics are used, than when the antiphlogistic treatment is employed. The remarks made upon this subject, under the head of mucous fever, may be applied to the present case.

Meteorism, of which an attempt has been made to establish

three or four species, depends sometimes on the distention of
the intestines by a gas, abundantly formed in all cases of the
functional disturbance of these viscera, and sometimes in in-
flammation of the peritoneum, whence results a disengagement
of gas in the cavity of this membrane. To combat the inflam-
mation is then the best means of preventing meteorism, and
when it occurs, the application to the abdomen of a bladder, partly
filled with water, of a temperature inferior to that of the skin, is
the best measure we can employ. It is not necessary to employ
ice; excessive cold might be hurtful: it is sufficient to keep up
a moderate degree of cold.

Hemorrhages, occurring at the commencement, or during the
period of the intensity of diseases, called adynamic, should ne-
ver be repressed; we are not, however, to promote them. The
quantity of blood which flows is sometimes enormous, without
any increase of debility, or, at least, if it increases, we generally
observe a cessation of all the symptoms of irritation, as well as
of those of adynamy: the patient is aroused from his stupor, and
nothing remains but weakness, which it is not difficult to reme-
dy, since he immediately becomes convalescent.

The hemorrhages which supervene in the last stages of ady-
namic fever, are not, in like manner, favourable. The blood
frequently flows until death, resisting all attempts to arrest it.
Neither plugging, refrigerants, nor astringent lotions, prepared
with acids or vegetable substances, containing tannin, have usu-
ally any effect in averting this impetuous effusion of blood attri-
buted to weakness. Let the advocates of this etiology explain
why the strongest tonics are powerless against these hemorrha-
gies, which they consider passive. They, doubtless, hasten the
fatal termination, by the excessive loss of blood, but it is no less
certain, that they are the consequence of an obstinate afflux of
blood to the organ in which they manifest themselves, and which
we as yet possess no effectual means of opposing. The same re-
mark may be made with regard to the excessive sweats which
manifest themselves in some cases of adynamic fever. Pru-
dence requires us to neglect nothing which can arrest, at the
commencement, a disease capable of producing results so formi-
dable.

The abundant and almost continual sweats, which supervene
in adynamic fever, merit particular attention. When they are

accompanied with paleness of the skin, slowness and infrequency of the pulse, reduced temperature and pale tongue, it is proper to give a few grains of the sulphate of quinine.

Since adynamic fever is only the highest degree of synochal, gastric, or mucous fever, convalescence requires no other measures than those employed in these fevers. I have pointed out the cases in which mild tonics may be used. This precept must not be too far extended, if we would avoid a tedious convalescence, in which we know not what treatment to resort to. An infallible rule is to discontinue all tonics, when they do not in a few days procure a gradual amendment of the digestive functions.

When inflammation has arrived at such a degree as to give rise to adynamic symptoms, the organism is profoundly modified; the system has lost much of its materials; we must, therefore, prescribe such nourishing articles of diet as the stomach can support, with the view of promptly restoring the strength. In this, perhaps, more than any other disease, should we remember that what nourishes is not what is eaten, but what is digested.

Adynamic symptoms are not the only ones which have been attributed to weakness: there are others which, ascribed without more reason to the same cause, have been grouped under the name of ataxic fever, as will be seen in the following chapter.

M. Louis recommends bleeding in the acute stage of the typhoid affection: if the subject be weak, twelve ounces are sufficient; otherwise double the quantity may be taken in the first ten or twelve days. According to him, the utility of local blood-letting is not so well established. This is one of his peculiar opinions, and is opposed by general experience, except in the case of young and plethoric individuals. He opposes blood-letting beyond the twentieth day; no one resorts to this measure at so advanced a period of the disease. He thinks that at this period a decided exacerbation of the disease is observed when stimulants are not resorted to. He believes that the drinks cannot be too abundant; this is an error: it is rarely necessary to exceed two or three pints in a day. The ingestion of so great a quantity of fluid is avoided by making the patient drink frequently, and but little at a time. Here he is influenced by the inflammatory character of the disease, contrary to his own wishes; for he compares the effects of drinks in the present case to that of ca-

taplasms and emollient baths in inflammation of the external parts. It is likewise as internal fomentations that he recommends lavements when the stools become very numerous. Thus far the treatment of M. Louis is that of the phlegmasiæ, but he soon returns to the old theory, and whenever the heat becomes moderate, the prostration considerable, and the meteorism disappears, or nearly so, when nothing indicates a lesion of the mucous membrane of the stomach, and weakness is the principal symptom, he advises a recourse to tonics, which are to be exhibited cautiously at first, lest there should be any error of diagnosis, with regard to the stomach: for this purpose, an effusion of bark may be administered by the mouth, and in lavements; afterwards, if these measures produce no bad effects, recourse may be had to the sulphate of quinine, in doses of eight, ten, twelve, or twenty grains, in an aromatic or gummous potion, with the syrup of quinine for drink, and the vinous lemonade; if the diarrhœa be abundant, tonic lavements, such as those of bark, and even simarouba, are to be used. " Tonics, if they are really indicated," says M. Louis, " produce their good effects in a short time; so that if in four or five days after their employment, we do not perceive a sensible melioration, we must discontinue them; since, in that case, there is reason to fear an error of diagnosis, and that some disorder opposes their employment." To appreciate the advantage which M. Louis, or rather the physicians in whose wards he collected the materials of his book, derived from this tonic plan, we must remember that he witnessed the death of a third of the patients thus treated: this consideration will excuse our entering into a more minute account of the method which he proposes.

Let it not be said, we repeat it, that the anatomical researches of M. Louis are devoid of utility; for if they have not convinced their author of the frequent inefficacy, and more frequent danger of tonics in adynamic fever, they have, at least, rendered this truth palpable to the attentive readers of his book.

CHAPTER VI.

Of Ataxic Fever.

Among fevers there are some which exhibit the most alarming symptoms formerly attributed to putrescency of the humours, and others which terminate in death, in the midst of the most perfect security inspired by the normal condition of the pulse, temperature and urine. The latter, for which Fernel retains the name of *malignant fevers*, assigned to them by the ancients, have been called *nervous fevers*, *slow nervous fevers* by Willis and Huxham. Stoll unites, under the name of putrid fever, both the *putrid* and *malignant* of Fernel: the same classification was adopted by Cullen, who thought that a more proper name was *typhus*, extending considerably the signification of this word, at present restricted to designate certain epidemic fevers, which are announced by alarming symptoms, and which carry off great numbers. J. P. Frank adopted the name of *nervous fevers* to designate the putrid fevers of Stoll: this name was not new; it however evinced an intention of assigning a seat to the disease.

A word which Hippocrates happened to make use of, and which was repeated by Sydenham, (ataxia) induced Selle to establish a fever with nervous symptoms without any alteration of the blood, the bile or the phlegm; that is to say, without the symptoms at present called angiotenic, gastric, mucous, or adynamic. After his example, Pinel recognised a simple ataxic fever, capable of being complicated with other fevers and with inflammation.

We have seen that to create the fever called adynamic, nosologists have only grouped the symptoms which appear when irritation with sympathetic phenomena are not arrested, and more especially when they are aggravated by stimulants. If they have committed an error of great magnitude in ascribing these symptoms to debility, their description is at least conformable to nature, and is simply a collection of morbid phenomena isolated from

those which precede and accompany them: these morbid phenomena, however, are found in certain patients, if not altogether in the order pointed out by the nosologists, at least such as he has described them.

In creating the order of ataxic fevers, nature has not been by any means so strictly followed. All is artificial in the description given by Selle and Pinel: the fever, as described by them, is a series of antitheses, in which the most formidable symptoms are made to alternate with the most insignificant, without any attention to order. These authors design to paint, not a disease, but a host of diseases, having this character—that they have nothing regular in their progress: they have designed to give an exact description of the disease by amassing and exhibiting, side by side, all the febrile symptoms that are ever encountered.

Hopeless of exhibiting separately all the shades of adynamic fever, they have confounded them in a single description, all the features of which are contradictory. They deem it sufficient to admit a simple ataxic fever absolutely imaginary, if by it be meant the description which we shall present to the reader, and complicated ataxic fever, which they have not described.

The characteristic symptoms of ataxic fever are as follows:

Derangement of the relations existing between the functions in *general*, and in particular of those existing between the different parts of a single system or apparatus of organs: tongue clean or covered with a whitish coating, moist or dry; thirst deficient or excessive, sometimes a dread of water; deglutition embarrassed or even impossible; sometimes a sense of strangulation, vomiting either spontaneous or provoked by the slightest causes, obstinate diarrhœa or constipation, pulse different in different parts of the body, and often in the same artery alternately large and small, strong and weak, frequent and unfrequent, regular, irregular or intermittent, syncope, transient appearance of local congestion, momentary redness and paleness of the skin, alternating with each other and distributed in an irregular manner, respiration alternately easy and difficult, frequent or slow, large or small, continued or interrupted; sometimes cough, hiccough, sneezing, involuntary sighing and laughter; the heat more or less elevated than in a state of health, unequally distributed and alternately augmented and diminished, with transient chills, rapid, contrary and often alternating changes of the secretions and exhalations, cutaneous transpiration sup-

pressed or augmented and often partial, cold or hot, clammy or watery, excretion of urine suspended, difficult and painful or very abundant; urine generally limpid, sometimes depositing a sediment without the least remission of the symptoms, involuntary shedding of tears, or dryness of the conjunctiva.   An obtuse state, or an excessive sensibility of the organs of sense, the looks wandering, somnolence or insomnolence, vertigo, coma, delirium or sound state of the intellect, no knowledge of those around, and ignorance of the serious character of the disease, indifference on this subject, or continued inquietude, sadness or despair, quick and short answers, voice shrill, stammering or aphonious, pain at the occiput, in the back, in the limbs, the hypochondrium; a total insensibility, carphology, prostration of strength without abundant evacuations, general or local tremors, subsultus tendinum, convulsions, universal or partial paralysis, symptoms of epilepsy, of catalepsy, of tetanus, &c.

These symptoms are nearly equal in each organ, or they are greater in some particular organs.

We shall now endeavour to throw some light on this confused mass of symptoms.   Among all the phenomena, which are the most remarkable, serious, and alarming?   They doubtless are those which manifest themselves in the nervous system: these symptoms may be divided into two series: in the first, I class excessive sensibility of the organs of sense, wandering looks, insomnolence, vertigo, delirium, pains in the occiput, back, limbs, and hypochondria, *jactitation, carphology, stammering, general and local tremors, subsultus tendinum, symptoms of tetanus, of catalepsy and epilepsy, hiccough, sneezing,* and *involuntary laughter*.   All these symptoms appear to me to be evidently referrible to the nervous system: the brain being the point to which the sensations and internal impressions tend, as well as the point of departure of the volitions and the seat of that singular action which unites all the vital actions, it is natural to conclude that this viscus is the principal source of the symptoms, or at least that they cannot occur without some lesion, secondary or primitive, of this organ.   I think it impossible not to perceive in these symptoms so many unequivocal symptoms of irritation. Shall it be said, that the insomnolence, delirium, and tremors are owing to weakness?   This cannot be imagined, for the brain is in a state of greater excitement during nocturnal insomnolence, than

while awake during the day, and this viscus must of necessity be
sur-excited by some organ, or be primitively irritated to prevent
its yielding to sleep, after prolonged waking. Delirium may oc-
cur in subjects who have experienced great loss of the materials of
their systems by hemorrhage or abundant suppuration. If deli-
rium be the result under these different circumstances, the rea-
son is, that the abstraction of blood occasions a sudden but irre-
gular sur-activity, because the relation of this organ to the other
viscera is no longer the same. As to the stammering and trem-
bling, they equally occur in weak subjects, but they do not, on
this account, depend upon debility; unless we attribute to this
cause Saint Vitus' dance, which generally occurs in very irrita-
ble subjects, whose nervous system, it may thence be concluded,
is in a state of sur-activity.

The second series of nervous symptoms is composed of an ob-
tuse state of the senses, of somnolence, coma, indifference to
surrounding objects, and even to life, of aphonia, of total insen-
sibility, of prostration, and universal or partial paralysis. These
symptoms appear at the first glance to be attributable to weak-
ness. It is certain that most of them indicate a suspension or
diminution of the functional activity of a part of the nervous sys-
tem, and particularly of the brain. But all these symptoms are
observed in arachnitis, in hydrocephalus, in encephalitis and in
cerebral hemorrhagy: they should, therefore, be attributed either
to an inflammation of the brain or its membranes, or to an alter-
ation of the texture of these parts, occasioned by an afflux of
blood, and consequently by a very intense irritation, which im-
pedes or abolishes the exercise of the functions dependent upon
this organ. In this case, inflammation of the arachnoid and of
the brain acts as all other inflammations, the first effect of which
is to suspend or disturb the functions of the affected organs.

Thus, it appears that the ataxic symptoms, which are observed
in the nervous system are not owing to essential debility, and
that every thing would induce us to consider the brain and its
connexions as the seat of these phenomena. This proposition
will acquire more certainty as we advance in the investigation
of the nature and seat of ataxic fever. We shall not be censured
for having separated the principal ataxic symptoms into two divi-
sions. Pinel thought of this division. "These lesions," he
says, "are far from being always referrible to a state of domina-

tion or obliteration of the nervous functions; for sometimes these functions are carried to a high degree of activity." It may be farther remarked, that the symptoms of irritation are the most constant, that they often succeed those which appear to announce debility; that more frequently they accompany them. Now, can it be supposed that the brain is at the same moment in a state of irritation and astheny? These considerations induce us to believe that this organ is more subject to astheny of function than to a state of absolute astheny, which is perhaps never remedied. At the commencement of ataxic fever, the weakness is only apparent; it is the effect of cerebral irritation, even when it makes its appearance without symptoms of irritation. At the termination, the symptoms of debility depend on disorganization. To this remark of M. Lallemand, let us add the following description, drawn by this professor, which will be of use in aiding practitioners in discovering the seat, degree, and effects of the encephalic irritation, which gives rise to the most characteristic phenomena of ataxic fever.

The affections of the brain and the arachnoid membrane manifest themselves externally by a lesion of the cerebral functions; that is to say, by symptoms related to the perception of external objects to the intellect and voluntary movements. The symptoms of inflammation of the brain present two characters directly opposed to each other; those of irritation and those of collapse: the first are likewise observed in inflammation of the arachnoid and the second in cerebral hemorrhagy; but we do not find them united except in inflammation of the brain, because in arachnitis there is irritation of the brain without alteration of structure, and in cerebral hemorrhagy there is at first alteration without irritation, and it is only in inflammation of the brain that there can be successively irritation and disorganization. When paralysis precedes the spasmodic symptoms, it is because the alteration of this tissue precedes inflammation, in consequence of an effusion of blood. When the spasmodic symptoms are wanting, the slow and progressive course of the paralysis easily distinguishes that which is produced by cerebral hemorrhagy. We therefore have;

In inflammation of the arachnoid, spasmodic symptoms without paralysis;

In cerebral hemorrhagy, sudden paralysis without spasmodic symptoms;

In inflammation of the brain, spasmodic symptoms, slow and progressive paralysis, unequal and intermittent progress.*

It is natural to inquire whether it be possible to carry the analysis farther, and, from the symptoms which manifest themselves, point out the part of the encephalon or arachnoid which is inflamed. M. Bouillaud thinks that paralysis of the organs of speech depends on the lesion of the anterior lobes of the brain,† and that of the inferior extremities on the lesion of the middle lobes, or that of the corpora striata; while, according to Laucerotte, MM. Foville, Pinel Grandchamp,‡ Lacrampe, Lousteau,§ and Carmeil,‖ the latter is in consequence of an affection of the anterior lobes. According to them, paralysis of the upper extremities is the effect of a lesion of the optic thalami, or of the posterior lobes of the brain, while, according to M. Bouillaud, it results from a lesion of the junction of these lobes with the middle lobes, and even of the latter themselves. This author thinks that the seat of the lesion which gives rise to paralysis of the muscles of the eye is yet unknown, and that the loss of the memory of words, or of the principal signs of our ideas, is owing to an affection of the anterior lobes of the brain.

Were the doctrine of Gall well established, which it is far from being, we could, at the sight of a patient who believed himself a god, or a pregnant woman, or who endeavoured to destroy every thing around him, immediately assign the precise seat of the disease; but this even Gall himself did not venture to do, lest post mortem examination might prove the falsity of his predictions. Yet if we admit, in a general way, that his doctrines are based upon truth, delirium will result from a lesion of the circumvolutions, and, according to MM. Foville and Pinel Grandchamp, from a lesion of the cortical substance.

* *Recherches Anatomico-Pathologique sur l'Encephale.* Paris, 1822–3; in 8vo.

† *Traite Clinique et Physiologique de l'Inflammation du Cerveau.* Paris, 1825, in 8vo.

‡ *Recherches sur le siege special des Functions due Systeme des Nerveux.* Mars. 1823.

§ *Recherches des differentes Functions de Systeme Nerveux dans les Annales de la Med.*

‖ *De la Paralysie chez les alienes, Recherches faites sous la direction de MM. Royer Collard et Esquirol.* Paris, 1826; in 8vo.

As to those cases in which sensibility continues after muscular motion has ceased, and those in which motion continues while sensibility disappears, they give rise to a question of great importance dependent upon anatomico-physiological laws, not yet positively established.

With regard to the arachnoid, MM. Parent and Martinet think that the inflammation of the portion of this membrane which covers the convexity of the hemispheres occasions a disturbance, more or less sensible, but always evident, of the intellectual faculties, which is characterized by cries and vociferation or loquacity, a slight incoherence of ideas, a change in the character, an embarrassment in expressing ideas; the derangement may reach a total cessation of the intellectual operation. The jactitation keeps places with the delirum, and ceases with it.

The inflammation of the arachnoid at the base of the brain, is announced, according to these authors, by convulsive movements of the eye, strabismus, considerable dilation of the pupils, especially in infants, in whom there is also failure of the intellectual faculties, with transient return of intelligence, while somnolence is entirely confined to adults; the special character of this partial phlegmasia of the tunica arachnoides is the complete or incomplete abolition of intellect; the other symptoms may arise from effusion. When the inflammation is confined to the ventricular portion of the arachnoid, which is an unfrequent occurrence, it cannot be distinguished from that of the portion of this membrane, which covers the base of the brain. When the arachnitis is general, there is a mixture of the symptoms which characterize the inflammation of both the convexity and the base. This probably occurs in the greater number of ataxic fevers.

M. Lenn thinks that suspicious respiration is the most frequent character of meningitis in infants, and that increased sensibility of the integuments of the trunk and great prostration announce inflammation of the corpus callosum, of the septum lucidum, or of the fornix.*

* See his *Recherches Anatomico-Pathologiques sur la Meningite Aigue des Infans et ses Principales Complications.* Paris, 1825, in 8vo. And the analysis by myself, published in the *Journal Universal des Sciences Medicales*, xxxix. p. 176 and xl. p. 83. D. Charpentier, *De la Nature et du Traitement et l'Hydrocephale Aigue (mening'o-cephalite) des Enfans*, Paris, 1829; in 8vo.

It is to be desired, that the researches of practitioners be directed in such a manner as to confirm or modify these propositions: to assent lightly to them would be to imitate the credulity which has been too frequently exhibited in relation to therapeutics. Since the first publication of this work the science has been perfectly stationary. Observations confirmatory of these different opinions are yet wanting, and their publication, from time to time, is much to be desired. The present state of uncertainty will not cease until the physicians of the great hospitals and the considerable towns, draw up with care, for a series of years, a detailed history of all their cases, and publish the result.

M. Guersent is one of the few physicians of the present day, who, although well versed in clinical and anatomical researches, still admit an ataxic state without appreciable alteration of the encephalon. This opinion is the consequence of attaching no importance to a slight injection of the arachnoid, or to a small effusion, although it be of a gelatinous character. It is to be regretted that so distinguished a practitioner has not entirely thrown off the yoke of theories so unworthy of him.

If we now proceed to an examination of the gastric symptoms of ataxic fever, we perceive that many of them are possessed of no value; but we find among them dryness of the tongue, excessive thirst, vomiting, diarrhœa, constipation: now, all these symptoms announce, incontestably, irritation of the digestive passages: enough has been said upon this point to render it unnecessary to return to it.

It is not necessary to prove that there is no spontaneous vomiting, that is to say, vomiting without a cause. The sense of strangulation is one of the symptoms the least known, and yet one of the least equivocal of irritation of the stomach, the pharynx, the larynx, and perhaps of the arachnoid; besides, it is a painful affection, and therefore not dependent upon debility. Impeded deglutition arises from its being attended with pain, or from inaction or spasm of the muscles which perform this act. The remarks on paralysis and convulsion are here applicable. The *horror of water*, which is perhaps only a consequence of impaired deglutition, is of too unfrequent occurrence in ataxic fever to derive from it any weighty argument in relation to this fever. Finally, the researches of M. Frolliot prove that the

three symptoms which have just been mentioned, announce in-
flammation of the arachnoid and of the larynx in hydrophobia,
a disease which presents the phenomena of ataxy in the highest
degree, and which would certainly be regarded as ataxic fever
by every practitioner who should observe the symptoms without
knowing their cause.

The different symptoms which have been mentioned, and
which have their seat in the digestive organs, are sometimes
wanting in ataxic fever.   Must we hence conclude, that this ap-
paratus is not affected? this opinion would frequently be dis-
proved by post mortem examination.   Or must we conclude that
there is malignity in the disease? Certainly not; for what can
be meant by such an attribute, assigned to a fever.   All that we
can infer is, that there is no lesion, or at least only a slight one,
of the digestive apparatus, or that the principal symptoms cannot
manifest themselves on account of the state of suffering of the
brain, for we shall shortly be convinced that this organ suffers
in every case of ataxic fever.   On the whole, none of the gas-
tric symptoms of this fever indicate astheny.   We shall present-
ly see, that the unequivocal symptoms of gastro-enteritis, which
are not less frequent than the nervous symptoms, have been
passed over in silence.

It is principally upon the state of the circulation that the na-
ture of ataxic fever has been made to depend.   It is certainly
most absurd to attribute to any other cause than irritation, the
force, fulness, and frequency of pulse, observed in a great num-
ber of ataxic fevers, particularly at the commencement.   On
whatever cause these diseases depend, these qualities of the pulse
announce energy of the contractions of the heart; and therefore,
if the disease be considered as resulting from weakness, it must
be confessed that this organ does not participate in it.   When
the pulse is frequent and quick, but small and weak, as it is ob-
served in most of these diseases, particularly towards the termi-
nation, the heart is evidently irritated, for quickness of pulse is
an unequivocal sign of sur-excitation of this organ.   But, at the
same time, its contractions are less powerful; stimulated by the
diseased organ, it precipitates its contractions till they can no
longer occur: this is observed in cases of inanition, where the
pain of the stomach and the want of nourishment, occasion rapid
but weak contractions of the heart.   At the termination of ataxic

fever, the pulse becomes slow, intermittent, and more and more small and weak when death is not remote. We have then reason to suspect astheny of the heart, but this astheny is not the whole of the malady: if this were the only affection, ataxy would not exist. Besides, it is not certain that smallness and even weakness of the pulse are an unequivocal index of weakness of the heart; since this is observed in a number of inflammations, even when there is no affection of the brain. It would be temerity to judge of the nature of a disease from a single symptom of so uncertain a character. In syncope, there certainly is suspension of the action of the heart, but as this takes place in many operations at the moment of the first incision, even when the patient has no apprehensions, it cannot be a certain sign of primitive astheny of the heart.

The slowness of pulse, often remarkable in ataxic fever, is one of the phenomena most deserving of attention; its frequent coincidence with congestion, cerebral hemorrhagy, and encephalitis, proves that it is not a symptom of general weakness, and that it would be more rational to attribute it to a diminution of the influence of the brain upon the heart. The inequality and intermission of pulse, which may be compared to the convulsive state of the muscles, does not at all prove the existence of astheny, or we must attribute to debility every crisis which is announced by intermission and inequality of the pulse. The case in which the pulse is not altered in ataxy, only shows that the heart may remain unaffected in the midst of the disturbance occasioned by the cerebral irritation. May it not be asserted, that if astheny of the heart sometimes occurs in ataxic fever, it is generally only apparent, and most frequently the symptom of an irritation.

The alternation of paleness and redness of the face, as it does not correspond to the change of the pulse, must be considered as an effect of the cerebral influence on the capillary circulation of the skin.

There is nothing in the variations of the temperature of the skin, which particularly characterizes ataxic fever; we find it augmented in one part and diminished in another, in every case of intense inflammatory, or hemorrhagic congestion, which is evidently active. If, for example, the skin covering the abdomen is burning, while that of the feet is very cold, this diffe-

rence announces an irritation of one of the abdominal viscera in ataxic fever, as well as in every other disease in which the symptom occurs. Shall it be said that coryza and epistaxis are owing to weakness or ataxy, because they are often preceded or accompanied, sometimes by a general rigor, at other times by a remarkable coldness of the hands and feet?

I think it unnecessary to proceed farther in this examination of the symptoms of ataxic fevers, for it is in vain that a sign of weakness is sought in the state of the respiration, the secretions, and excretions: moreover, I treated of certain peculiarities of these functions, when on the subject of adynamic fever. Thus far we have seen that the phenomena of ataxic fever for the most part announce irritation, and that a very limited number of them indicate weakness, which even in these cases may be contested, or it may be only functional or local. What is there then to lead to the supposition that this fever is owing to ataxy; a peculiar modification of the vital action, differing from weakness and irritation, since it is announced by the symptoms of these two states divided in such a manner that the phenomena of irritation predominate?

What has caused this disease to be attributed to a disorder, derangement or perversion of the vital action is the apparent incoherence of the symptoms, and the disorder existing in the relations which are established between the different functions *in general*, and between the different parts of the same system or apparatus of organs *in particular?*

Do the incoherence of the symptoms announce a domination of that sympathetic connexion of the organs which is so necessary to the maintenance of life? No! This apparent disorder proves the contrary; when in the latter stages of the ataxic fevers, the union of the organs becomes less intimate and the symptoms which manifest themselves, are those of prostration, there is no longer incoherence; that is to say, symptoms of irritation on one point, and those of weakness on another? Now, if from our knowledge of adynamic fever, it be not rational always to attribute the symptoms of prostration to astheny, it would be much less so to attribute them to a pretended ataxy, which the disorder of the symptoms does not indicate. Let us now examine this pretended disorder.

Selle gives, as the principal characteristic of ataxic fever, ner-

vous symptoms without any relation between them, and not corresponding to manifest causes. It would be easy to prove that these symptoms answer perfectly to their causes, although we cannot explain how the latter produce them, except by pointing out the organs upon which they act, the symptoms which they determine in those organs, and the morbid traces left after death.

Selle, less vague than Pinel, attempts to describe this disorder of the symptoms: *a certain sensation of disease without apparent symptoms;* (this is only the malaise which precedes all diseases;) *no complaint or despondency when the symptoms are of an alarming character.* (How is the patient to judge of the danger of symptoms? Are phthisical patients who die in the midst of schemes of pleasure in a state of ataxy?) *the fear of death;* it should at least be added, *when the disease appears of little intensity;* this despondency is peculiar to some individuals who are alarmed by the slightest morbid state, and it is particularly observed during the prevalence of fatal epidemics: *insomnolence without fever or pain;* this is one of the precursory signs of all diseases; there is here no incoherency; pain must not necessarily exist to keep the brain awake, since excessive heat is sufficient to determine insomnolence; *pulse more weak and concentrated at the time of the accession and exacerbations,* (this only shows that the congestion which occurs in ataxic fever is more serious than in any other,) *tongue dry without thirst, or moist with great thirst;* when there is lesion of the brain, it ceases to perceive, that is, during a state of suffering, like all other organs it ceases to act; in health the thirst is often excessive without the tongue ceasing to be moist; in chronic inflammations of the pharynx, which accompany chronic inflammations of the stomach, there is no thirst although the tongue and throat are dry, and yet no one sees ataxy in this case; the *skin dry without heat;* what more common than this symptom? *Sweat not salutary;* is the sweat, then, salutary in all except ataxic fevers? *Spontaneous passage of worms.* No one, since Selle, has given this symptom as a sign of ataxy; *excretions without any improvement in the symptoms;* this takes place in all diseases while they are not on the decline. Finally, must we add to this series of unimportant symptoms the following, to which Selle did not attach less importance than to the others? Blood-letting does not assuage the pain; it is followed

by hiccough; emetics do not produce vomiting, but they readily purge.

Without spending more time in this refutation, which proves on what slender grounds celebrated men have been pleased to create orders and genera of diseases, I proceed with a view to the juster appreciation of the pretended disorder which is said to prevail in ataxic fever, to sketch the principal shades of these diseases, instead of confining myself to the narrow circle of a description too general to be true, or of an incoherent list of symptoms.

When the invasion of these fevers is not sudden, it is announced sometimes by derangement in the cerebral action, sometimes by the signs of a lesion of the digestive organs, and finally, sometimes by signs of reaction in the circulatory system, or of plethora. In the first case they are preceded by cephalalgia, heaviness of the head, somnolence, vertigo, moroseness, inquietude and distress without apparent cause, sad presentiments, agitation, spontaneous lassitude, or syncope. In the second case we observe the premonitory symptoms of gastric, bilious or mucous fevers. In the third case all the precursory phenomena of inflammatory fever are observed. It thus appears that ataxic fever may commence in many different manners.

1st. When, after all the phenomena of excited circulation which have been enumerated, when treating of inflammatory fever, the irritation which constitutes this fever becomes more easily recognised, on account of its progress, if it be seated in the brain or its membranes, or if these parts are deeply influenced by the irritation which constitutes the disease, sensibility is exalted, the eye becomes more sensible to the light, the ear to noise, the conjunctiva is injected, pains are felt in the bottom of the orbit, in the forehead or occiput, or the headache increases very much; there is dimness of vision and vertigo; the sense of smell is blunted or revolts at the slightest odour, there supervenes wandering of the mind, delirium, somnolence, insomnolence or painful dreams, and interrupted sleep, the body falls into a torpid state, and becomes painful in some points. Here, it is evident that irritation has increased in the cerebral apparatus, or that it has extended to it? These new symptoms have the greatest analogy to those of cerebral congestion without inflammatory fever, or rather they are the same. Why, then,

should the nature of the lesion producing them not be recognised, when they appear after other symptoms, whilst there is not the slightest doubt concerning them, when they manifest themselves primitively? Who can mark with accuracy the instant when an inflammatory fever, owing to cerebral irritation, becomes an ataxic inflammatory fever? It is evident that there is merely an increased intensity of the symptoms, which only supposes an analogous increase of irritation in the organ in which they manifest themselves. In the inflammatory fever, owing to gastric, uterine, or any other irritation, the cerebral symptoms, which I have described, instead of increasing, generally make their appearance after those of the primitive irritation, upon which, sympathetic irritation of the brain supervenes: from this period, the latter affection, if it do not engross, should at least share the attention of the physician.

2. After the continuance for several days of the gastric or intestinal embarrassment, which is only an irritation of the stomach or intestines with or without bilious or mucous secretion, the headache, hitherto supportable, becomes exasperated, the sensibility of the organs of sense is augmented, and delirium or somnolence supervenes. Is it not evident, in this case, that the disease which hitherto had exercised but a feeble influence over the encephalon, has invaded this organ or its connexions, in a high degree, and that there is not a complication of two diseases of a different nature, but an extension of the seat of one disease? Consequently, the terms gastro-ataxic and mucoso-ataxic fever, can only create erroneous ideas, by giving rise to the opinion that we behold two opposite morbid conditions, contending with each other, and which it is necessary to reconcile, or to attack in succession.

3. After the slight cerebral symptoms, which have been mentioned, have continued for a longer or shorter time, the cephalalgy becomes excessive, somnolence is succeeded by a profound coma, the inquietude by a sort of despair, agitation by convulsive movements, vertigo by dilirium, spontaneous lassitude by depression, complete prostration, or even partial or general paralysis. Nothing, in this case, authorizes the opinion that the disease has changed its nature, since each of the symptoms has only increased, and if others supervene, having the nervous system for their seat, they cannot be attributed to any other lesion than that

which gave rise to the symptoms which have been mentioned, or they are the effect of a modification of structure determined in the cerebral apparatus by this same lesion. The present case is one in which the ataxic fever is said to be simple, because the circulation is but little deranged, and the symptoms of gastric derangement are not important, or they may even be wanting. It is called cerebral fever when the disease attains such a degree of intensity as to give rise to the most violent symptoms of irritation of the brain or rather of arachnitis. It was to justify the admission of this sort of local fever among ataxic fevers, the extension of which to the whole organism was not questioned, that the following sentence was subjoined to the description of ataxic fever; viz. "These lesions are nearly equal in all the organs, or they may be stronger in some: hence cerebral fevers, &c." Here we observe Pinel advanced a step towards the localization of fever, but he suddenly stopped. A profound study of the works of Bordeu would have hastened rather than have suspended his progress.

Sometimes the symptoms of cerebral excitement or oppression suddenly make their appearance during the soundest health. It being admitted that these are the only symptoms, why should any thing be seen in this affection but what is announced by the phenomena, that is, an irritation or an astheny? post mortem appearances might then be consulted to determine whether the affection of the brain be of the character we suppose. This has not been done in this variety of simple ataxic fever; symptoms of excitement and of debility have been found united, and from this circumstance they have been considered as owing neither to debility nor to excitement, and, to account for their development, the word *ataxy* has been used, which signifies absolutely nothing. When death occurs rapidly in ataxic fever supervening suddenly, the morbid cause has generally spent its whole force upon the encephalon, although it might primarily have acted upon the digestive apparatus, or upon the lungs. When we find morbid traces after death, which is always the case, they are observed in the encephalic apparatus.

5. The ataxic symptoms supervene frequently in the midst of those of a manifest inflammation of the lungs, the stomach, the uterus, or the liver; perhaps most frequently during the most intense degrees of these phlegmasiæ. Since after death we gene-

rally find traces of inflammation in the encephalon as well as in one or more of the organs just mentioned, what can authorize the opinion that the ataxic phenomena are the effect of some occult cause, *sui generis?* Why have these phlegmasiæ been regarded as peculiar in their nature? as ataxic inflammations? How does a phlegmasia change its nature by extending to many organs?

6. The greatest variety prevails in the progress and development of the symptoms of ataxic fever. Sometimes the inflammatory, gastric, bilious, or mucous symptoms continue notwithstanding the appearance of the nervous symptoms; sometimes they disappear entirely, or nearly so. To these symptoms of excitement are often joined those of prostration, without, however, a cessation of the former. Thus, although prostration supervenes, the eyes become excessively sensible to the light, and the delirium continues; convulsive movements continue in the limbs, which at last fall into paralysis. In other cases, prostration first occurs, and is followed by excitement; there is afterwards a mixture of the symptoms of both states. The scene is terminated sometimes by terrible convulsions, and sometimes by a profound prostration. Occasionally, though rarely, the cerebral symptoms cease, in some cases almost suddenly, though more frequently by degrees: there only remain the inflammatory gastric, bilious or mucous symptoms, which diminish or cease; or these symptoms themselves may disappear in the first place, and the disease proceed more or less rapidly towards a cure.

7. The duration of these fevers is said to be from one day to two, three, four or even more weeks. Sometimes the patient continues to present some cerebral symptoms, generally conjoined with those of mucous fever, and continues in this state for thirty or forty days, or more: he appears to be only slightly affected, but the ataxic symptoms augment, predominate over all the others, and, notwithstanding partial evacuations, he generally succumbs. This is the affection which Huxam denominated *slow nervous fever:* it is the *mucous ataxic fever* of Pinel. At other times, transient cerebral symptoms succeed each other slowly, in a subject who presents no mucous symptom, and he often perishes, as in the preceding case. This is the *nervous hectic fever* of Willis, which is only observed in old men after encephalic hemorrhage, arachnitis or encephalitis.

8. Among the symptoms of inflammatory, gastric, or mucous fevers, the symptoms of adynamy conjoined with those of ataxy are sometimes observed to supervene, that is to say, they are accompanied with sordes of the teeth, a black coating of the tongue, fetid diarrhœa, fetid and partial sweats, &c. This state constitutes the gastro-adynamo-ataxic, mucoso-adynamo-ataxic, or ataxo-adynamic complications, which are only gastro-cephalites with or without inflammation of another organ than those of the cerebral or digestive apparatus.

The termination of ataxic fevers, when abandoned to nature, is generally fatal, evacuations seldom announce a cure; when the termination is favourable, we often observe an inflammation of the parotids, an abscess in the cellular tissue of the limbs or about the region of the lymphatic glands.   The patient, escaping death, often remains blind, deaf, paralytic, in a state of stupor, of stupidity, or without memory, at least during a certain time, and sometimes for ever.   Under these circumstances, he generally dies in a few months or years, unless he be very young. In gastro-ataxic fever evacuations very seldom announce a recovery; indeed, not less seldom in this fever than in the others which are discussed in this chapter.

Hippocrates endeavoured to point out the phenomena which, in acute diseases, announce the approach of death: most of these symptoms have been ranked among those of ataxy; and it is with truth, that M. Broussais has said, that nosologists have sought the signs of ataxic fever in the last agony.   However this may be, the following are the signs, none of which have any value, except in conjunction with several others; viz: A profound coma, from which nothing can arouse the patient, obstinate insomnolence, unequal dilatation of the two pupils, immobility of the pupils, a convulsive rolling of the globe of the eye, which has lost its brilliancy; aphonia, embarrassed deglutition, noise made by fluids falling into the œsophagus, irregularity of respiration which is interrupted, obstinate hiccough; carphology, subsultus tendinum, convulsions, pulse calm, in the midst of the most alarming symptoms; meteorism of the abdomen, a very abundant diarrhœa, an escape of fecal matter without the knowledge of the patient, a cold, clammy, and partial sweat; finally, hemorrhagies, which nothing can arrest, particularly those in which the blood is black, and coagulates but imperfectly.   It is proper

to repeat, that none of these symptoms announces death when they appear alone. But when there is a concurrence of many of them, there is great reason for apprehension. It is far from being the fact, that these phenomena always precede death; it often occurs without the slightest warning, but what is derived from the intensity of the symptoms, or the known character of the prevailing epidemic.

Since, in forming the class of ataxic fevers, nosologists have collected and compared the cases in which the nervous, and particularly the cerebral symptoms predominate over all others, the brain should be examined in preference to other parts, in exploring the seat of the disease: it is natural to seek it here, and, at first, the idea of it existing in the other viscera was not entertained. Most of the physicians who have prosecuted researches of this nature, generally agree, that dissection discovers traces of lesions of the brain, and its membranes. At the same time that they pointed out the lesions of the encephalon, in malignant or ataxic fever, some of these authors have not neglected to note the alterations which were observed in the other viscera, but most of them considered the latter as the effects of the fever. M. Prost appears to have been the first who positively affirmed that ataxic fevers result from an inflammation of the mucous membrane of the intestines. " I have made," said he, " more than two hundred examinations of persons who had fallen victims to ataxic fever, and I have always observed inflammation of this membrane."*

If we read with care, the different collections of observations in pathological anatomy, published from the time of Bonnet, to the present day, we shall find scattered through them a multitude of cases, in which death having occurred after malignant or ataxic symptoms, dissection has discovered traces of inflammation, or irritation in other parts, besides the brain and digestive viscera. Morgagni relates a considerable number of such cases. These post mortem appearances, are calculi in the substance of the kidney, in the pelvis, in the uterus or bladder, or inflammation, and suppuration of these organs; inflammation of the peritoneum or uterus, abscesses in the liver; vomicæ in the lungs, the existence of which had not been suspected; he-

* *Medicine Eclairèe par l'Observation et l'Overture des corps*, Introduction, p. 56.

patization of this viscus; pleurisy and pericarditis, where no-
thing had indicated these affections; in a word, there is no part
of the body in which an active inflammation, or a violent irrita-
tion, suddenly or gradually developed, has not occasioned death,
after having determined ataxie symptoms. The traces of this
inflammation, when seated in the abdomen or chest, are often
accompanied with an effusion of serosity into the cranium: at
other times, nothing is found in this cavity.

There are cases of ataxie fever, which leave traces of no le-
sion, either in the brain, the organs of digestion, or in any other
part of the body. These cases are the least numerous, they are
not so few in number as the cases of adynamic fever, without
traces of gastro-enteritis, although they are less common than is
generally thought.

We shall now attempt to establish the comparative frequency
of the numerous organic alterations, observed after ataxic fever.
Should I form a judgment from the works of physicians who
have investigated with care the seat of these fevers, and from
my own observations, in the greater number of cases, there are
found traces of inflammation of the meninges, or of the brain:
these are generally accompanied by marks of inflammation in
the digestive canal; then follow the less numerous cases, in
which the canal alone is altered in its structure; afterwards, those,
less numerous still, in which the encephalon alone is altered:
finally, the more common case, in which inflammation of some
other organ than those of digestion, has determined death by
exciting the brain, whether the latter has or has not undergone
a true sympathetic inflammation, and whether it does or does
not present morbid traces. The least common cases, are those
in which no traces are found after death.

The lesions found in the cranium after ataxie fever, are, ful-
ness of the vessels of the meninges, of those of the brain, or of
both; redness and opacity of the arachnoid; redness of the ce-
rebral substances; serous or gelatinous effusions, generally in the
ventricles, on the hemispheres, or at the base of the cranium;
sanguine effusions in the cerebral substances, sometimes on the
surface of the arachnoid, purulent effusions, false membranes on
the surface of the arachnoid, pus infiltrated between the arach-
noid and pia mater or in the cerebral substance, collected in small
masses; or an abscess in this substance, with or without sanguine
infiltration.

Too little importance has been attached to these different lesions: however slight some among them appear to be, they must not be disregarded in an investigation of the nature and seat of the disease, after which they are observed. If they are found in a great number of bodies, it is because death rarely occurs without the previous existence of some ataxic, that is, cerebral symptoms, for the brain must always be affected before death occurs. To judge with accuracy of the part which encephalic irritation performs in ataxic fever, we must consider the nature of the lesion, the period at which the ataxic symptoms manifested themselves, and the degree of intensity, as well as the number of these symptoms. There are yet many researches to be made before we can determine with accuracy during life, the state of the encephalon; but whatever difficulties embarrass the subject, it is our duty to prosecute it with ardour. The works of MM. Coutanceau,* Ducrot,† Deslandes,‡ Parent and Martinet, but especially those of Professor F. Lallemand, have produced results too advantageous, not to inspire physicians with a desire to follow their example. It can already be affirmed, that the alterations presented by the brain and its membranes are always owing to a greater or less degree of inflammation. This has been established beyond a doubt by M. Lallemand.

We have in the preceding chapter mentioned the alterations discovered in the encephalon by M. Andral at the termination of thirty-eight grave fevers. M. Louis remarks, that in two of the subjects opened by him, after what he calls the typhoid affection, the arachnoid was attached over a considerable space to the superior part of the brain, by a false membrane, which was extremely soft; the cortical substance was more or less rosy or red in seventeen subjects, the medullary substance injected in most cases, generally in a moderate manner; both these substances were slightly softened in seven subjects: there was in two others a partial softening, inconsiderable in extent, confined to the septum lucidum, or one of the thalami nervorum optico-

* Des Epanehments dans le crane, pendant le cours des Fievres Essentielles, Paris, 1802, in 8vo.

† Essai sur la Cephalite, Paris, 1812, in 4to.

‡ Examen des Differentes formes que peut prendre la Phlegmasie des Méninges, Paris, 1817, in 4to.

rum; the cerebellum presented the same alterations as the brain in
a smaller number of cases.

We must here remember, that M. Louis classes convulsive
movements among the symptoms of what he calls the typhoid
affection; which affection he wishes to refer solely to a lesion of
the glandulæ Peyeri.

Now we perceive, that in most of the cases, the encephalon
was not in its normal condition, and we know not how he could
so ligthly regard alterations, the importance of which he cannot
but be aware of at the present day. We repeat it, the correctness
of his descriptions is continually refuting his theory.

The spinal marrow often participates in the state of the brain;
probably there are cases in which it is more affected than the
latter, but its alterations are but yet little known. They form
an interesting subject of research, and cannot fail to throw much
light upon the theory of fevers. Attention was first drawn to
this subject by J. P. Frank.

Before him, Hoffman had spoken of the part performed by
the spinal marrow in fevers. The venerable Chaussier has some-
times found traces of inflammation on the surface of this part of
the nervous system, in subjects who had fallen victims to ady-
namic fever. Abercrombie, Brera and Rachetti, have made ana-
logous observations; the first after malignant, and the last after
petechial fevers. M. Ollivier has frequently observed a consi-
derable injection of the vessels, covering the pia mater of the
spinal marrow, in subjects who had presented all the general
symptoms of adynamic fever. How much research remains to
be made on this point of pathological anatomy and physiology!

The alterations found in the digestive system after ataxic fever
do not differ sensibly from those found in the same apparatus af-
ter adynamic fever. There are striæ and patches of a more or
less deep red, or black patches more or less extended, ulcers, the
extent, number, form and depth of which vary infinitely, with-
out our being able to establish any relation between these varie-
ties and those presented by the cerebral symptoms. This need
not excite surprise, for danger is the more urgent in proportion
as the encephalon is more irritable, and it is not repugnant to any
known principle to admit that a feeble gastric irritation some-
times determines a violent cerebral irritation, since a small quan-
tity of wine, any disagreeable news of however trifling a cha-

racter, or the slightest pain is sufficient to disorder the intellects
of some persons.

If the various alterations of the digestive canal, have but lit-
tle relation to the cerebral phenomena, they correspond perfect-
ly to the gastric symptoms which have preceded or accompanied
these phenomena. The remarks made in the preceding chapters,
with regard to this relation, are perfectly applicable here.

When the gastric symptoms have ceased on the appearance of
the cerebral phenomena, we often find in the digestive canal,
traces of the inflammation which occasioned these symptoms,
but sometimes no traces are discoverable, whether it be the case,
that the gastro-enteritis has really ceased, which occurs only un-
der the anti-phlogistic treatment, or that it has continued in too
slight a degree to have traces after death.

When the encephalic irritation, or inflammation has been pro-
voked by croup, bronchitis, pleurisy, pneumonia, pericarditis,
hepatitis, cystitis, in a word, by any other inflammation than
that of the stomach and intestines, when death has been the re-
sult of an inflammation which has been recognised, but has been
considered ataxic, or complicated, with a pretended ataxic fever,
no other traces are found in the organ primitively inflamed, than
those observed when death has not been preceded by this com-
plex series of ataxic symptoms. Sometimes no vestige of in-
flammation is found, it having ceased at an early period, or its
traces having disappeared with the cessation of the circulatory
movement. Thus, the case is the same here as in ataxic fever,
occasioned by the influence of a gastro-enteritis upon the brain,
and, as in that case, morbid traces are sometimes found in the
encephalon, and sometimes not. The latter organ has seldom
time to become deeply affected, because death occurs more ra-
pidly, owing to the affection of the two important viscera: thus,
we rarely find lesion of the brain after ataxic peripneumony, and
this has occasioned a mistake, with regard to the part performed
by the encephalon in ataxic fevers, complicated with manifest
inflammation of the pectoral viscera. The same observation ap-
plies to the cases in which the abdominal viscera being mani-
festly inflamed, death supervenes rapidly.

It results, from what has been said, that ataxic fever is only
an inflammation, or an irritation of the brain, and some other or-
gan, that the cerebral irritation is generally secondary, that it

generally depends upon gastro-enteritis, but that any other inflammation may occasion it; that the primitive phlegmasia of the digestive canal, or of any other organs may cease and leave no trace, that of the encephalon continuing till death, and that the traces of the latter may disappear before the opening of the body: this explains the cases in which no vestige of inflammation is found.

It remains to demonstrate that there are ataxic fevers, solely derived from a primitive irritation, or inflammation of the brain and its membranes. Nothing shows that this cannot be the case; we are, however, to remember that these are the most unfrequent cases. But the diagnosis of these fevers is often most difficult: in the first place, because there is often gastro-enteritis in ataxic fevers, the most simple in appearance, that is to say, in those which present no bilious or mucous symptom at any period of their course; in the second place, the primitive cerebral irritation often gives rise to a sympathetic irritation of the stomach and intestines. This transmission of the irritation of the brain and its membranes, is not constant, whatever may be said by M. Broussais.* But when it occurs, it occasions the greatest embarrassment. When we are called to a patient presenting all the phenomena of ataxy, with symptoms of gastro-intestinal irritation, it is rarely possible to know whether the brain suffers primitively or secondarily. We, however, should remember that dissection renders it most probable that its lesion is secondary.

When to the cerebral phenomena, are joined the symptoms of some other inflammation than gastro-enteritis, there is the same difficulty to decide whether the irritation of the encephalon is primitive; but a farther difficulty presents itself, to determine whether there is not, also, a latent inflammation of the digestive passages.

Those among my medical brethren, who can see only subtleties in these questions, do not perceive that their solution would entirely dissipate the obscurity which still rests upon the seat of ataxic fever, would put an end to the uncertainty which harasses us at the bed-side of the patient, and would furnish a certain basis for the diagnosis, as well as the treatment of these fevers, which have hitherto defied, and still defy the powers of medicine.

* *Deuxieme Examen.* 1, p. 29, prop. cxviii.

When we shall perfectly understand the part performed by each organ in ataxic fever, and especially by the brain and its connexions, we shall no longer have an inextricable labyrinth of functional derangements; we shall then be able to direct our attention methodically and profitably to the means proper to arrest the progress of the disease. Until then, notwithstanding the satisfactory progress already made in pathology, we shall still be reduced to the adoption of tentative means in a diversity of instances.

The study of the causes of ataxic fever, remedies in part the difficulties presented by the investigation of the primitive irritation, and the appreciation of the state of the digestive passages in these diseases.

Ataxic fevers have no other causes than those of inflammatory, gastric, or adynamic fevers: yet it is necessary to their occurrence, that the subject be naturally predisposed to encephalic irritations, or that he should have been exposed to the causes most capable of irritating the brain. It is on this account that ataxic fever occurs more frequently in infants and women, than in males and old persons; in those who are called nervous, that is to say, who feel acutely, whose sensations and volitions are violent and impetuous, and succeed each other with rapidity; in those who have been a long time exposed with the head bare to the rays of the sun, who have received blows upon the head, or have fallen upon any part of it, who are addicted to intense study, a prey to grief, or who have injured themselves by excessive venery; finally, in those who have sustained a great loss of nutrient materials by abundant evacuations of mucus, pus, or blood, or who have been exposed to the influence of deleterious emanations, of putrid food, the action of which is rapidly propagated to the brain.

When the patient has been exposed only to causes capable of acting directly on the encephalon, such as lesions of the cranium, or brain itself, or of its membranes, by a mechanical cause, by too violent sensations, impetuous passions, or excessive venery, and the cerebral symptoms manifest themselves alone, there is reason to believe that the gastric passages are not affected, especially if hitherto they have given no sign of irritation. When they have not been irritated before the invasion of the disease, and they afterwards appear to become so, there is reason to believe

that their irritation is sympathetic, and depends upon that of the brain.

If, on the contrary, the person has been drinking and eating to excess, or using putrid food, if he has been exposed to the influence of deleterious emanations, if there be any signs, however inconsiderable, of gastric irritation, we may presume that the digestive organs are the principal seat of the irritation: we may even presume this to be the case, when there is no symptom of gastro-enteritis; for it often happens that the morbid state of the brain prevents the development of the sympathetic effects, which might announce gastro-enteritis, while the latter continues its ravages, or may even become aggravated, if it be misunderstood, or treated improperly.

Finally, if to the causes capable of disposing the encephalon to become irritated, are joined the causes of the irritation of any other organ, as the lungs, or the uterus, we must not neglect to investigate the influence which they may exert, at the same time, or secondarily, upon the organs of digestion.

In acting upon the encephalon, or upon the gastro-intestinal mucous membrane, at the same time or successively, the causes of ataxic fever may extend their influence to the gall-bladder, or the biliary ducts, to the liver, the kidneys, the uterus, or the bladder. We easily recognise during life, these different irritations by the icterus, and the suspension or suppression of urine. After death, we often discover traces of these irritations, and if I have not yet spoken of them, it is because, they are almost always secondary in essential ataxic fever, although a primitive inflammation of the biliary and urinary apparatus may, like gastro-enteritis, determine a secondary encephalitis, and the ataxic symptoms which result from it, as is shown by the terrible consequences of traumatic cystitis, or hepatitis.

We thus see that if the ataxic fever approaches the adynamic fever in respect to its origin, it differs from it in this; that it may be the effect of causes which act only on the brain, and that these same causes almost always contribute to its production, even when they do not produce it alone; that, consequently, the ataxic fever is often the effect of a primitive cerebral affection, a state which is incontestably an irritation, and which the physician should never neglect. We perceive that if ataxic fever is, like adynamic fever, most frequently only the last scene or highest degree

of inflammatory, gastric, or mucous fevers, it is in this case owing to a complication which requires means appropriate to the sympathetic irritation of the brain. It is not, under these circumstances, always sufficient to direct our measures against the primitive irritation of the stomach, the intestines, or any other organ, to cure the lesion of the encephalon and dissipate the ataxic symptoms dependent upon it.

In his first work, M. Broussais appeared to attribute ataxic fever solely to gastro-enteritis; the symptoms peculiar to those fevers did not depend entirely, according to him, upon the influence of the stomach and intestine upon the brain. He now acknowledges that the latter organ may become inflamed under the influence of gastro-enteritis, and that we have then to contend with two dangerous inflammations; yet, when he attempts to define ataxic fever, he contents himself with saying that it is a gastro-enteritis with considerable irritation or phlegmasia of the brain.* If this definition be more complete than that of M. Prost, which M. Broussais formerly opposed,† it is objectionable in assigning too much importance to the gastric inflammation, and not sufficient to the cerebral, which is always regarded as secondary.

There are ataxic fevers without gastro-enteritis; but there are none without encephalic irritation: on this account I think the definition of M. Broussais is erroneous: it should be as follows; ataxic fever is an encephalitis, sometimes primitive, more frequently secondary, generally accompanied with gastro-enteritis or supervening in the course of inflammation of the lung, the uterus, the peritoneum, &c.

Treatment of Ataxic Fever.

How surprising is the absurdity of those physicians, who, attributing ataxic fever to a profound lesion of the nervous system, to a sort of obstruction and compression of the origin of the nerves, to a disturbance, or subversion of the general laws of the animal economy, can devise no fitter remedial measure, than the exhibition of an emetic, followed by the immediate employ-

* *Deuxième Examen*, p. 34, prop. cxxxviii.
† Hist. des Phleg. Chron., 2d edit. 2, p. 7.

ment of tonics; who advise to sustain the strength by incessant
doses of generous wine, and to remedy the general debility by
the employment of stimulants, and who reject blood-letting al-
together, whatever may be the symptoms of inflammation, under
the vain pretext that all the causes of ataxic fever are debili-
tating, although they admit a state of *effervescence of the head*,
and assert, that after death " we most frequently find serous effu-
sion into the lateral sinuses, sometimes all the characters of an in-
flammatory state of the meninges, which have become opaque
and thickened," and although they declare that " the momentary
excitement resulting from the employment of the most active
stimulants, is soon succeeded by a state of debility still more
dangerous."*

It is evident that if these physicians have suspected the part
performed by the brain in the production of ataxic fever, and
perhaps even the nature of the lesion which exists in this organ,
they have fallen into the most dangerous contradiction in re-
commending the employment of all the means most calculated
to increase the encephalic irritation.   It is not less evident that
they have entirely misunderstood the gastro-enteritis, which is so
often the primary focus of the ataxic symptoms, and which exists
often when the encephalitis is primitive.   If several physicians
have demonstrated the inflammation of the brain in the fevers of
which we are speaking, we owe to M. Broussais the knowledge
of the frequency of gastro-enteritis in these diseases: he has con-
verted into certainty the suspicions of those among his predeces-
sors and contemporaries who indistinctly saw irritation of the
digestive apparatus in malignant fevers, without completely re-
nouncing the employment of stimulants.   We are indebted to
him for proving the necessity of banishing stimulants from the
treatment of these fevers, and the result has been a decrease of
the mortality.

To combat the tendency observed in some individuals to cere-
bral irritations; to remove the causes which may strengthen or give
rise to this disposition, and those, which, acting directly on the
encephalon, on the digestive passages, or any other part of the
body, may primitively or secondarily occasion irritation or inflam-
mation of the brain and its meninges, to attack with energy the

* Nos. Phil. p. 263, 264, 268, 276, &c.

irritations which might, by becoming aggravated, determine that of the encephalon, finally, to combat the latter from the moment of the appearance of the slightest symptoms; such is the course we must pursue with a view of preventing or retarding the development of ataxic fevers.

To cure them, which is very difficult, we must combat the irritation of the encephalon by drawing blood from the head and lower extremities; by the application of ice to the former, plunging the latter into a hot bath, and by giving warm or cold drinks. If the stomach be inflamed, we must apply leeches to the epigastrium, and emollient or refrigerant fomentations to the abdomen; if there be diarrhœa, leeches must be applied to the anus and emollient and anodyne lavements must be administered; if there be pain in any point of the abdomen, leeches must likewise be applied; they must be placed below the false ribs on the right side, if the region of the liver be painful and the conjunctiva and skin yellow; to the hypogastrium, if the uterus be painful, to the loins or perineum if the urine be suppressed. At the same time we should adopt the measures I have pointed out against encephalic irritation.

In every case, diffusible stimulants, blisters and all excitants which might occasion acute pain should be discarded: these measures only procure transient advantage, by irritating the brain; this irritation cannot but be injurious, since it affects an organ already irritated. We may employ cups, sinapisms and rubefacients, taking care not to excite too much pain: it is sufficient to redden the skin, for the objects we propose; that is, to produce revulsion when it is possible.

If the disease be prolonged and the digestive passages are not irritated, we may administer veal water or chicken water, which we may discontinue, provided the cerebral symptoms increase, or those of gastritis manifest themselves.

Such is the only method which we can generally follow in ataxic fevers; if it be not always crowned with success, it is at least appropriate to the nature and seat of the disease; it is also that which most frequently succeeds; it is never injurious when we do not carry blood-letting too far. There are some cases in which we should take blood copiously, others in which we should be reserved in the employment of this measure, and, finally, others in which we must entirely abstain from it, unless

the disease be very intense; for in this case, if we omit blood-letting, and the patient die, we shall have reason to reproach ourselves with the neglect of a remedy so often efficacious.

In plethoric and vigorous subjects, whose circulation is energetic, as well as in those who present the marks of the bilious temperament, we should bleed copiously from the foot, from the jugular vein or temporal artery, apply a great number of leeches to the temples, to the epigastrium, or to the anus, according to the predominant cerebral, gastric, or hepatic symptoms.

In subjects who are more irritable than sanguine, that is to say, whose brain is very excitable, although the arterial system, the lungs and the heart do not enjoy a remarkable activity, we must abstain from general blood-letting, unless the face be animated, the conjunctiva injected, and the cephalalgia insupportable. In all other cases, topical blood-letting suffices, provided it be repeated as frequently as the intensity of the symptoms require.

In subjects exhausted by privations, by loss of blood, of pus or any other matter, weakened by preceding diseases, and whose nervous systems, and particularly, whose brains are possessed of an excess of sensibility, which fresh evacuations might increase, at the termination of ataxic fever, and when it continues during several weeks, we should generally abstain from blood-letting.

If cases occur in which it would be injurious to take blood even by leeches, we must not then conclude that tonics or stimulants should be resorted to. We must here beware of making a false application of the tonic method, which succeeds in ataxic intermittent fevers. In vain may we flatter ourselves, even when the gastric passages appear sound, with the hope of operating a salutary derivation. In place of procuring the displacement of the cerebral irritation, we run the risk of increasing it, so intimate is the connexion between the stomach and encephalon. When tonics administered in such cases produce good effects, it is because the cerebral irritation is already on the decline. I know not whether the most imminent danger or even the certainty of a fatal termination, when blood-letting cannot be employed, or is not sufficient, excuses the administration of quinine in a disease in which an organ so important as the brain is violently irritated, or has already undergone the consequences of irritation.

If emetics are generally hurtful in adynamic fever, they are more so in ataxic fever, and the reason is already conceived, for irritation of the brain constitutes the whole danger of the latter. The afflux of blood towards the head, occasioned by the effort of vomiting, adds to the determination to the head; so that nothing is more common than to see delirium manifest itself in this fever immediately after vomiting.

Purgatives would appear more appropriate in ataxic fever, without apparent irritation of the digestive passages; but with whatever rapidity they pass over the gastric mucous membrane, they never fail to produce a certain degree of irritation; and it is doubtful whether the intestinal irritation which they occasion be useful in ataxic fever; since, when administered in lavements in high doses in meningitis, in cephalitis, and in cephalic hemorrhagy, they often inflame the mucous membrane of the intestines, without palliating the cerebral affection. I have so often found red patches and ulcers in the great intestine after ataxic fevers, which had not appeared to be produced by the lesion of these organs, that I shall not hereafter hazard the employment of purgatives, under whatever form, in these fevers. They have, however, been frequently employed by M. Roche with great boldness, and he has sometimes had reason to be gratified with the result, never to regret the measure.

After having laid down the general therapeutic method in ataxic fever, and the modification it should undergo on account of idiosyncrasy, it remains to point out other modifications relative to the different forms under which these fevers appear.

In the shade which has received the name of cerebral fever, where all the symptoms present the sthenic character in the highest degree, and announce, in particular, a considerable afflux towards the encephalon, and often a well characterized arachnitis, of which we almost always discover traces, all the resources of the antiphlogistic treatment should be employed. This is the case for bleeding from the foot, to be immediately succeeded by the application of leeches to the temples in great numbers; it is particularly in this case that we should keep up the flow of blood, plunge the feet in hot water, and at the same time apply ice to the forehead, or even over the whole cranium. If syncope supervenes, it is a good omen: we place the patient in the recumbent position, remove the ice, and apply cataplasms very hot to

the feet, prepared with a mixture of flaxseed and mustard. If after the syncope the inflammatory symptoms of the head have ceased, we need not return to the application of ice: if the symptoms partially return, the ice should be again applied, and fresh leeches applied upon the legs.

When in the midst of a high irritation which appears general, cerebral symptoms manifest themselves, in a word, in inflammatory ataxic fever, we must insist upon general blood-letting: bleeding from the foot is preferable to bleeding from the arm. The opening of the temporal artery is the more indicated, as the loss of a certain quantity of arterial blood more promptly reduces the vital action than the evacuation of a more considerable quantity of venous blood. In the present case, mustard foot baths, and particularly sinapisms should not be employed but with reserve, and only after bleeding; for every stimulation, even on the surface of the body, may, particularly in the first moments, accelerate the circulation, and augment the determination to the head.

When cerebral symptoms are conjoined with prominent symptoms of gastritis, with or without bilious symptoms, that is, in ataxic, gastric or bilous fever, a problem presents itself for solution: must we, in this case, after the example of Broussais, endeavour principally to combat the gastritis, and content ourselves with applying leeches to the neck, or behind the ears, when the cerebral phenomena lead us to suspect inflammation of the meninges or of the brain itself. Should we, following the plan of M. Regnault, first combat the encephalic irritation by the repeated and large application of leeches to the temples when the symptoms of gastritis are not very intense, leaving the latter to be directly attacked after the diminution of the cerebral irritation?[*] I have often seen irritation of the encephalon disappear with rapidity, although the gastric irritation alone had been combatted; but I have also seen the latter diminish, and the danger increase because the former continued in all its violence. I have seen the symptoms of gastritis diminish sensibly under the influence of topical blood-letting from the temples, directed against the cerebral irritation; and even when the former did not decrease, the state of the patient has caused little apprehension on account

* Journ. Univ. des Sci. Med. Sept. 1818.

of the manifest diminution of the cerebral symptoms, one or two applications of leeches to the epigastrium has completed the cure. Since I made this observation, I have very often commenced with the application of leeches to the temples, and ice to the forehead, and hot pediluvia, even in gastro-ataxic fever. By these means the cerebral affection almost always diminishes, and often ceases entirely. The gastric irritation itself sometimes disappears, or at least only continues for a few days, and we then have time to combat it by the application of leeches to the epigastrium or anus; the danger occasioned by the cerebral irritation having disappeared, if not altogether, at least in a great measure. Such is particularly the course we should pursue in gastro-ataxic fevers, manifesting themselves after prolonged watching and excessive labour, in persons addicted to study, and whose stomachs are very irritable.

It would be hazardous to imitate the example of certain enthusiasts, and perceive nothing but gastro-enteritis, not only in gastro-ataxic fever, but likewise in all ataxic fevers; for we should then confine ourselves to the application of leeches to the epigastrium, and the irritation of the organ whose integrity is most essential to life would be attacked neither directly nor with sufficient vigour. On the other hand, if, after the example of Marcus, Rasori, Clutterbuck, and Georget, we see in all these fevers only meningitis and encephalitis, the irritation of the digestive passages would be neglected: this would be highly dangerous, since it is very frequently in vain that we directly attach encephalic irritation arising solely from gastric irritation. The opinions of these physicians, equally conclusive in their opinions and in their practice, are both erroneous; one by attaching too much importance to the organs of digestion, and the other to the encephalon: the latter, perhaps, succeed more frequently than the former, but they frequently do harm, and they fail of doing all the good they might effect. The wisest plan is to watch with equal solicitude the two organs assailed by the irritation.

The appearance of intense cerebral symptoms in the midst of the mild symptoms which characterize the gastro-enteritis, to which the name of *mucous* fever has been given, constitutes a complication the more serious, as we cannot generally resort either to copious local blood-letting or even to energetic revulsives, so advantageous when the brain is not greatly irritated.

The highest degree of this disease constitutes one of the most fatal diseases to which man is subject, and one against which the resources of medicine are too often found unavailing.

The various encephalites and meningites, simple or complicated with gastro-enteritis, with or without mucous secretion, and continuing for a month, six weeks, or even longer, and which have received, as I have already remarked, the name of *slow nervous fever*, are most frequently beyond the resources of medicine. Hitherto they have been treated unsuccessfully by tonics, and yet the opposite practice, pointed out by the nature of the disease, has not been resorted to: nor has the success of the latter plan yet been definitely tested by experience. It is however, certain that these fevers are aggravated rather than relieved by tonics. We must endeavour to sustain the patients with light nourishment, when the stomach permits it, and the skin should be stimulated, not violently, but in a continued manner by a succession of sinapisms, applied to different parts of the body. It is not yet ascertained how far or at what period of these fevers, more powerful derivatives might be advantageously used.

Should the remarks on the treatment of ataxic fever be considered too brief or unsatisfactory, and should it be concluded on this account that the treatment of these fevers has made little progress, the inference would be erroneous. I am very desirous not to do injustice to this part of the system which I advocate, and I would beg practitioners to consult experience before they pronounce judgment.

It will perhaps be said by some, that with the exception of blood-letting, my opinion would lead to the adoption of the *expectant system:* many will doubtless consider cold and hot applications combined, as possessed of but little efficacy, and others will blame the caution with which I advise the employment of derivative applications. On these points, so numerous and important, no single individual is competent to decide. What has been said is entirely conformable to the observations I have had an opportunity of making, and I shall be ready to modify my opinions, whenever more numerous observations demonstrate their error. But there is one point which experience has decided beyond all question; and that is, the danger of tonics in continued ataxic fever. Finally, whatever be the treatment

adopted in these fevers, we cannot flatter ourselves that we shall frequently succeed when they are intense, and when we do not soon obtain a favourable change.

When the brain is profoundly irritated, either primitively or secondarily, there is generally but little hope of saving the patient, in whatever malady. This organ, forming the bond of union of all the other organs, ceases to act for the preservation of the whole economy, of which it is the principal part, when its own existence is endangered. Such is the sense in which these words should be understood: *disturbance. of the vital principle, ataxy, irregularity, perversion, disorder of the vital properties:* expressions which give a false idea of ataxic fevers when these diseases are studied only in their symptoms.

CHAPTER VII.

Of Typhus.

THE word *typhus* was employed by the Greek physicians to designate a disease in which the external and internal senses were struck with stupor by a cause affecting the brain, in which this organ is oppressed, as it were, by the smoke and soot of a sort of fire: this affection was considered, not so much an inflammation announcing itself by unequivocal signs, as a species of smouldering fire, burning internally, and but little characterized externally.

This figurative language, to which the Greeks were so partial, is not much relished at the present day. It, however, proves that they had an idea of the disease of which we are treating.

Sauvages was the first to give to malignant fever the generic name of *typhus:* he classed together under this name *the typhus of Egypt* of Prosper Albini, *the nervous malignant hectic fever* of Willis, *the malignant soporose fever* of Riviere, *the slow nervous fever* of Huxham, *the hospital and jail fevers* of Pringle, and *the camp typhus* of Boerhaave.

Cullen followed closely the footsteps of the learned nosologist of Montpelier; for with him every fever with grave symptoms, or with danger not manifest, but real, was a typhus. His opinion of the grave character of the disease, and of the danger of the patient, is even at the present day the only idea attached to the word typhus by several physicians. But J. V. Hildenbrand thinks we should reserve this denomination to designate an acute disease, which is febrile, essential, special, primitive, principally characterized by stupor and an expression of astonishment, and which may be communicated to those predisposed to it, and pre-

sents an alteration more or less remarkable of the liver. According to this author, typhus is sometimes inflammatory, sometimes nervous and putrid, and may assume all these characters at once. *

According to Pinel, typhus fevers are true adynamic and ataxic fevers, which may sometimes assume in a higher or lower degree the bilious or inflammatory character in the first period of the disease, and which are referrible to the same causes as all other fevers, marked by a fatal tendency, and are communicated by emanations, which are exhaled from the body of patients or from their excrements. Typhus is then, in his opinion, only a variety of adynamic or ataxic disease, according to the symptoms which characterize it: this at least may be inferred from what we find with regard to this disease, in the first volume of his *Nosographie Philosophique*, edition of 1818, from page 145 to 163; but at page 196 of the same volume, he says that typhus is a peculiar disease in which adynamic and ataxic symptoms are continually making their appearance, either conjointly or separately; that this disease has the greatest analogy to the plague, and that an intermediate place between adynamic and ataxic fever is the most appropriate one that can be assigned to it in the present state of the science.

The nature and seat of diseases should be investigated principally in those disastrous periods when they extend their ravages to a great number of subjects, and appear under all the symptomatic fevers which they can assume. For this reason, I shall proceed to give a summary account of the observations made by Chirac, Pringle, Poissonnier Desperrieres, on the typhus of cities, camps, hospitals, and ships. This disease has been so frequently witnessed, that I could report the history of a great number of epidemics. The work of Dr. Ock will supply my silence upon several of these epidemics.†

France had been desolated by famine, when Chirac went to Rochefort in 1694. This town, situated upon the Charente, is, he remarks, defended from the north wind by a considerable elevation and by a forest; on the east is a meadow, which is generally inundated by the river every year, and which in summer

* Du Typhus Contagieux; trad, par J. C. Gasc; Paris, 1811, in 8vo.
† De Curanda Febre Typhoid; Leipsic, 1830, in 8vo.

is covered at low tide, by muddy water, which exhales an infectious odour, perceived even in part, especially during the evening.

On the arrival of Chirac, measles and small-pox were prevailing of a very fatal character: these were followed in succession by subintrant double tertian fevers, by malignant fevers, and finally, by pestilential fevers.

Chirac attributed the development of these fevers to elevation of the temperature after a mild winter, to marshy exhalations, developed under the influence of a burning sun, and south wind, to mental distress, alarm, and a bad diet, inseparable from a state of war, to the use of acid wine, of bread made of mildewed or damaged grain, and, finally, to scarcity of provisions

Immediately on the appearance of malignant fevers, the mortality, already considerable, increased; they continued till the month of June.   The disease commenced with a violent rigor or icy coldness, pain or weight of the head, an extraordinary lassitude and prostration of strength.   During the chill, the pulse was scarcely perceptible.   To these first symptoms succeeded nausea and almost continual vomiting, then a diarrhœa of serous or variegated matters, yellow, green, or black.   The evacuations very frequently became bloody.   The pulse rose with difficulty; the patients scarcely became warm, and they did not receive their natural warmth during the first two days.   Some died on the second or third day in the cold stage, there having been no reaction.   In general, the pulse rose but little till the fourth day, when it became natural, or very frequent and feeble, and remained so till the end of the disease.   Purple spots began to make their appearance in some on the fourth day; in others on the succeeding days. Exacerbations occurred every day towards evening.   From the fourth to the fifth day, the patients were affected with delirium, or sunk into a state of torpor, which continued to the end of the disease.   Purple spots began to appear on some on the fourth day, on others on the following days. The urine remained clear till the fourth day, and did not become red and of a deep colour until the pulse became accelerated; it was scanty and deposited a lateritious sediment; sometimes there was suppression of this discharge from the sixth to the seventh, or from the tenth to the eleventh day.   The belly frequently became tense, the right hypochondrium was tense and very

painful; copious sweats appeared on the seventh, eleventh, and fourteenth days: bleeding from the nose occurred in many. The greatest number perished after the seventh day; many died on this day: in those who recovered, the disease continued to the four-teenth, eighteenth, or even twenty-first day.

On dissection, the brain was always found gorged with blood, of a deep red or livid colour throughout its substance; the liver in like manner inflamed and engorged with blood, the stomach and intestines red, inflamed, and covered at intervals with livid spots. The ventricles of the heart and the vena cava, contained blood, more or less clotted: all the ramifications of the vena por-tarum were very apparent, and filled with grumous blood. In many bodies, a sanious serosity was found effused between the membranes of the brain and into the abdomen.

Chirac was of opinion, that the name of inflammatory dispo-sition of the viscera, or of inflammation of the brain, should be given to these fevers, but he entertained erroneous ideas with regard to the viscidity of the blood. *

2. During his residence in Germany, in Flanders, and in Scot-land, from 1742 to 1750, Pringle had many opportunities of observing typhus fever characterized by the following symptoms: viz., 1, before the accession, slight alternations of heat and cold-ness, trembling of the hands, sometimes slight numbness of the arms, weakness of the limbs, loss of appetite, malaise, excessive heat during the night, interrupted and unrefreshing sleep, weight or pain of the head, pulse at first quicker than usual, tongue white and not very dry: 2d, after the accession, great moral de-pression, nausea, pain in the bones, continual weight or pain in the head, considerable prostration, pulse quick and variable with regard to force and fulness on the same day; blood sometimes buffy, coagulum dissolved in the more advanced stages, urine sometimes reddish, sometimes turbid, more frequently pale, oc-casionally clear; towards the termination, thick, often sedimen-tous, diarrhœa if the patient had been affected with it before, or if he had taken cold; constipation under opposite circumstances; stools sometimes involuntary, bloody, of a cadaverous odour, especially at the termination, acrid heat and generally dryness of

* Traité des Fievres Malignes, des Fievres Pestilentielles et autres, Paris 1742, in 12 vols.

the skin, tongue almost always dry, and, unless some precaution was taken, hard, black, deeply fissured, sometimes soft and moist, but covered with a yellow or green coating to the point, thirst sometimes excessive, more frequently moderate, breath offensive in the advanced stages, and the teeth covered with a black matter; always great stupor, generally delirium, advancing in intensity as the pulse became weaker, insomnolence, dejected air, wandering of the mind, eye muddy, conjunctiva red; when the delirium was excessive, visage inflamed, eyes very red, answers short, agitation, and at a later period, the face emaciated, eye-lids half closed, interrupted sleep, extreme weakness of the voice, subsultus tendinum, hearing at first hard, afterwards entirely gone; generally vomiting, weight and pain of the stomach, sometimes a painful point of the side, difficulty of breathing, vague pains; frequently small spots of red which are sometimes more or less pale, sometimes livid and almost confluent, at other times scarcely visible, few in number upon the chest and back, and upon the face, more portentous in proportion as they were more purple; sometimes they did not appear until after death, exacerbation during the night.

The duration of this disease was from seven to fourteen or twenty days; it terminated by inflammation of the parotid or axillary glands; after the cure, there often remained pains in the limbs, debility, a disagreeable sense of numbness, vertigo, and noises in the ear.

Pringle attributes the development of this disease to the modification which the air undergoes in hospitals, where a great number of patients are collected together, owing to exhalations emanating from their bodies, or their excrements. To this cause should be added, those which he assigns to the fever of autumn, or of the camp, of which the typhus of the hospitals is the highest degree: these causes are cold and humidity, fatigue and want of cleanliness, and, likewise, unwholesome food, the bad effects of which he has not sufficiently estimated. The propagation of the hospital typhus is effected, according to him, by the infection of the air, which, he says, communicates it but slowly.

Ten bodies only were opened; in some, the three cavities were examined, while in others, only the cranium and abdomen were explored. In one patient, whose disease had continued

about a month, three ounces of purulent matter were found in
the brain, both the cortical and medullary substance of which
was soft: a similar matter was found upon the cerebellum.   The
patient had been deaf, and affected with a stupor, yet he had not
ceased to answer justly the questions proposed to him, until the
night previous to his death; at which time, the muscles of his
face became convulsed.   The second patient, affected with stu-
por and deafness from the commencement of the disease, had
not completely lost his reason; the pulse had sunk rapidly; ten
days before death, his head had swelled, and remained in this
state until two days before he expired.   During the last days
he would only drink cold water, and during the disease, he con-
stantly laid upon the right side: his brain was found in a state of
suppuration.   The third had, likewise, partially retained his
senses and answered questions properly: in him suppuration of
the cerebellum was discovered.   In two other subjects, an in-
flammation of the cortical substance of the brain was discovered.
In one of them, who had died with diarrhœa, the small intes-
tine was very much inflamed, and the large intestine already in
a state of *corruption*.   In another subject, who died when every
circumstance seemed favourable to recovery, the brain presented
no alteration.   Finally, in another, who died after the forma-
tion of an abscess in each of the orbits, the brain was very flac-
cid, and there was about two ounces of serosity in the ventri-
cles.   The other parts of the body were not examined in the
two last.   Pringle concludes, by saying, that the intestines are
more particularly disposed to *mortification*, but he admitted in
flammation of the brain, although he was much attached to the
idea of putrescency.

3. In 1757, the typhus made its appearance in the squadron
of Admiral Dubois: and afterwards extended to the town of
Brest: we are indebted for the history of the disease to Pois-
sonnier Desperrières.   All the causes most calculated to favour
the most formidable epidemics, seemed to concur to the produc-
tion of this disease.   The forces consisted in part of convales-
cent sailors, who had come from Rochefort, many of whom re-
lapsed either in the road of Brest, before they sailed, or during
the passage.   On the arrival of the fleet at Louisbourg, on the
20th of June, they mixed with the patients of the other vessels.
The sailors were employed together in the most severe labour,

and the convalescents themselves were obliged to work. The latter generally relapsed, and died; a great number of the healthy seamen fell sick. On the 30th of October, the day of their departure, four hundred were left on shore moribund. A hundred convalescents embarked, of whom a great number died on the passage, and yet on disembarking at Brest, on the 22nd of November, there were four thousand sick, who were crowded into provisional hospitals, hastily established. The physicians and surgeons of the vicinity offered their services; others were sent from Paris by the government. It was impossible to preserve cleanliness, to disinfect the air, to separate the convalescent from the sick, and keep the latter at a proper distance from each other. The disease extended to the houses of the poor, which, in a short time, were crowded with the dying and the dead. The disease then extended its ravages to the rich; it was carried, according to the accounts, into many cantons of the province, either by the convalescent, or those who fled. Six physicians, and one hundred and fifty surgeons of the town, the country, or from Paris, fell victims to this pestilence; those who were engaged in opening the bodies, almost all died in two or three days: the epidemic became more violent in March, 1758, and ceased in April, after having, in five months, carried off ten thousand persons in the hospitals of Brest, and a considerable number in private houses.

The principal symptoms were the following: 1st, Before the accession: lassitude, an insupportable sense of heaviness, numbness of the limbs, loss of appetite, sense of weight, and afterwards of heavy pain in the head, principally in the forehead and temples, impaired state of the intellectual faculties, dulness, tending to somnolence. 2nd. After the accession, restlessness, pulse generally small and soft; rarely hard and elevated; nausea, sometimes vomiting; tongue more or less loaded, and often moist during the first days; mouth foul and breath offensive; eyes dejected and sunken, or animated and lively, with inflammation of the conjunctiva, and increased lachrymal secretion; irregular chills, difficulty of respiration, countenance livid, of a leaden aspect; weakness of the limbs. 3d. In the course of the disease, acrid heat of the skin, pulse at one time small and concentrated, at another, stronger and quicker than at first; sometimes intermittent and irregular; in the evening exacerbations with chills,

frequently assuming the double tertian type; augmentation of heat, and prostration; pains in the regions of the stomach and liver, vomiting of green or yellowish matters, painful tension of the hypochondria and abdomen; in some cases the bowels open, in others constipated; urine often clear and white, more frequently red and depositing a sediment of the same colour, sometimes brown with a blackish sediment, delirium, sometimes sad and at other times furious, skin dry, intolerable odour of the sweat, when it broke out after the exacerbations, fecal matter very fetid, tongue dry, blackish, as it were grilled, trembling and hardly capable of being protruded, thirst at first excessive, afterwards moderate, convulsions of the muscles of the face, floccitation, purple, livid, or blackish spots on the skin; sometimes deafness, or even amaurosis. 4th. After the seventh day, the interior of the mouth and the throat often spotted with little gangrenous aphthæ, clammy and cold sweats, respiration embarrassed and interrupted with sobbing, increased agitation, more marked intermission of the pulse, which still became weaker, odour of the urine very strong, dejections excessively fetid, excoriations, and afterwards gangrene of certain parts of the skin, sometimes anthrax, and very frequently petechiæ, and vesicles filled with serosity in different parts of the surface.

When all these symptoms were found united, there was but little hope, yet a progressive melioration of all the symptoms were sometimes observed after an abundant discharge of urine, copious alvine dejections, or hemorrhage from the nose: convalescence was tedious, and if regimen was badly observed, or too soon abandoned, a relapse and speedy death were almost inevitable.

Poissonnier Desperrieres points out the following causes of the appearance and development of this disease; viz. depressing moral affections, bad nourishment, want of cleanliness, continuance in an unwholesome harbour, cold and humidity, conjoined with excessive fatigue. As to the propagation of the disease, it evidently depended upon the crowding together of a great number of patients, in a town situated on ground which was generally damp, during a mild and rainy winter: under these circumstances the exhalations from the bodies or excrements of the patients, became sources of disease; these exhalations, like all

those disengaged by putrid or morbid animal matters, cannot always be respired with impunity even by the healthy.

The remarks of Poissonnier Desperrieres, with regard to the results of the post mortem examinations are deserving of literal quotation. "It must be observed," he remarks, "that notwithstanding the symptoms which seemed to announce a marked affection of the brain, this organ, when incisions were made into its substance, and it was examined with care, always appeared in a natural state, with the exception of two instances, in which it was found slightly engorged. In no case did the ventricles present any thing extraordinary; but this was not the case with regard to the abdomen. It was in this cavity that manifest disorder was remarked; the liver was frequently found livid, soft, and spotted with ash-coloured or blackish patches, under which were seen drops of clotted blood; the gall-bladder was much distended with bile, and there was generally found in the stomach and duodenum a certain quantity of this fluid, green and porraceous, and which stained the colon of the same colour. In some subjects, there scarcely remained any traces of the epiploon; it was entirely *dissolved*. Patches were here and there scattered over the intestines of almost all the bodies, and in some sphacelus had invaded a portion of the intestinal canal, which sometimes contained worms and sometimes feces of intolerable odour. The lungs, also, sometimes appeared to have been one of the seats of the disease; at least engorgements and gangrenous suppurations were frequently observed in them. The blood which filled the heart, was black and dissolved."

Poissonnier concludes from these appearances, that the disease was an inflammation, often followed by gangrene, and according to the spirit of the times, we attributed this inflammation to very acrid and putrid substance. *

4. On the 9th of February, 1814, a number of soldiers, wounded, worn out by fatigue, forced marches, unwholesome food, depressing moral affections, severe cold and privations of every kind, were admitted into the hospital of Salpetrière. Towards the end of March, and in April typhus began to become frequent, and to extend, appearing either in its simple form, or

* Traité sur les Maladies des gens de mer, 2 edit. Paris, 1780, in 8vo.

in its diverse complications, with adynamic fever, the phlegmasiæ of the chest, or a sort of colliquative diarrhœa. In the month of May, it spread still farther among the attendants of the hospital; it then extended to the apartments of the women, through those who had been employed in the military wards. Of eight physicians who volunteered their services, three died; viz. Dural, Serain and Blin. The attendants who had been employed in depositing in the store-house the property of the patients, as well as those who were engaged in the fumigation of the wards, were all carried off. A retired part of the infirmary was assigned to the women, in whom symptoms of the epidemic appeared. The air was renewed every half hour, continual fumigation was kept up, the linen often changed, and the face washed with acidulated cold water.

Pinel draws the following picture of this typhus:

Very frequently acute headach, generally pains in all the muscles with a sort of numbness, sometimes affecting the abdominal limbs alone. During the excessive colds, pain in the articulations, contractility impaired or entirely gone, face presenting the appearance of intoxication or stupor; great difficulty of the movements of the tongue and of articulation; sometimes general trembling, acute and prolonged sensibility, which sometimes succeeded the torpor, and continued a long time after convalescence. 2. Somnolence, from which, when the disease was not very intense, the patient was readily aroused, to look around him with an air of astonishment mingled with sadness, and to take the drink administered to him without appearing to bestow the slightest attention upon what he was doing. 3. In the greater number of patients a tinkling and beating noise affected the ear, some thinking they heard bells, others various instruments of music; this was succeeded by deafness; in general, there was lesion of the sense of hearing, more or less marked: during the first days, eyes brilliant, injection of the muscles of the conjunctiva; afterwards gradual diminution of sight; delirium obscure and taciturn, incoherence of ideas, horrible hallucinations, answers slow, though proper, an involuntary repetition of the motions peculiar to the profession of the patient: at the highest degree of the disease, a confused articulation of words, which were the more unintelligible in proportion as the tongue was covered with a dry and blackish coating; judgment extremely weak;

great difficulty in being aroused from stupor, and readiness to
relapse into it.   4. Very often a *catarrhal state* of the mucous
membranes of the thorax, abdomen and throat; often complica-
tion with gastric embarrassment, with an angina, a pleurisy, a
peripneumony, a species of dysentery, or colloquative diarrhœa;
involuntary stools of blackish, greenish, or yellow matters, *in
consequence of the stupor*.   5. During the first ten days of the
disease, variations of the pulse, according to the intensity of the
disease, the state of the stomach, and the lesions of the organs of
respiration; towards the eleventh day the pulse weak and con-
centrated; in cases of great danger, or of complication with a
phlegmasiæ, pulse extremely accelerated, to the amount of one
hundred and twenty or thirty pulsations in a minute; pulse some-
times almost or entirely extinct in the arm; in women variations
of pulse from uterine hemorrhage, which often occurred at the
commencement of the disease.   6. Towards the sixth day, pe-
techiæ, which increased and disappeared alternately, or remained
permanent; occasionally desquamation of the epidermis; some-
times icterus; towards the decline of the disease alarming heat of
the abdomen or head internally.

Of one hundred and twenty attached to the hospital, who were
seized, only twelve died.

A soldier presented, on the opening of the body, a congestion
in the mucous membranes of the throat; in another was detected
a considerable affection of the mucous membranes of the intes-
tines. "This state," says Pinel, "might be defined not *decided
inflammation*, but a *species of catarrhal excitation*, which is
of no great value with respect to prognosis, provided it do not
attain a violent degree."

Pinel mentions no other dissections.   After having given a
brief history of these memorable epidemics, I shall present an
extract from the general description of typhus furnished by Hil-
denbrand. This author divides typhus into regular and irregular.
Regular typhus is announced by a change in the temper or cha-
racter, indifference, impaired desire, lassitude, more considera-
ble after exercise, unrefreshing sleep, foul breath, trembling of
the hands, generally vertigo, a painful and sudden commotion in
the limbs, pain in the loins, oppression at the pit of the stomach.
After this state has continued from two to seven days, the dis-
ease commences by a painful tension of the head, a sensation of

chilliness in the back, interrupted with flashes of heat, tremors, anguish, thirst, dejection; the chills continue from six to twelve hours. These chills are succeeded by a remarkable heat, sensible to the touch, and harassing to the patient, who complains of chilliness in the parts which are uncovered, while the covered parts are burning: thirst, and a desire for cold and acid drinks constantly accompany the heat. Nausea and vomiting almost always occur, although the tongue is clean, the face red, and animated, the tongue rather white than loaded, the skin halituous, urine scanty, more red and burning. The head is extremely heavy, the patient experiences a sense of intoxication, and malaise rather than pain; vertigo is, perhaps, the most constant symptom. The stools are nearly natural, the pulse full, quick, never tense, not entirely free, generally depressed with a dilatation always more marked, and contraction comparatively slight. There is either absence of sleep, or it is unquiet and agitated. On the succeeding days the vomiting and sometimes the nausea disappears or diminishes, and the heat augments. Although the patients appear to sleep, they suffer from violent internal agitation; the heaviness of the head increases until stupor supervenes, in which the senses become extinct; noises are heard in the ear, vertigo increases rapidly, the debility becomes extreme, the repugnance to motion invincible, the act of speaking is painful, the answers are slow, and the tongue is slowly protruded: the eyes become redder; the membrane which covers the tongue, the nose, and the throat are engorged, deglutition is painful, the patient suffers from oppression, and frequently from a harassing cough; the hypochondria are tense and painful, especially the right hypochondrium; pains are felt in the limbs, particularly in the calf of the leg, the joints of the fingers, in the lumbar regions and in the back. Towards the fourth day there is generally a nasal hemorrhage, which is not abundant, always succeeded by momentary relief: about the same time, red patches, frequently accompanied by small pustules or petechiæ, appear on the surface: they are observed sometimes on the face, but particularly on the back, loins, chest, and the upper parts of the thighs and arms.

Towards the end of the seventh day, a very remarkable exacerbation is succeeded by an apparent melioration of the disease, which, however, does not often continue longer than a few

hours; after which the heat augments, the tongue and skin become dry, the red patches of the skin disappear, petechiæ remain or appear for the first time, the epidermis becomes dry and wrinkled, the intellectual faculties are destroyed, the appetite ceases, the patient no longer asks for drink; the mouth is dry, the tongue sometimes becomes hard, like a piece of wood; deglutition is difficult; the nasal cavities are obstructed by dry mucous matter, or blood; the oppression ceases, although respiration is higher and more frequent; cough ceases, and is succeeded by hiccough; the stools become frequent, liquid, and of a cadaverous odour. Pains of the intestines, at least slight pains, always appear; they increase when pressure is made on the abdomen, which is affected with meteorism; the urine is scanty, pale, clear, or slightly turbid, and very seldom sedimentous; the pulse is often moderately strong, full and free, never small or extremely weak, of ordinary quickness, usually variable with regard to force; the diastole is constant, although the systole is scarcely perceptible. so that the pulse approaches that which is called *depressed*. We observe tremors, subsultus tendinum, slight convulsive movements, spasms of the muscles of the neck and of the bladder: hardness of hearing increases, the sight is more impaired; the smell, taste, touch, in a word every sense appears to be gone, the patients dream without sleeping (typhomania;) when they are half asleep, they gesticulate and talk in the most incoherent manner; some particular idea takes possession of them, and it usually is the only circumstance of their disease which they remember when they recover. Their indifference to all surrounding objects is surprising; they have no desires, even on the subject of their own health. Stupor, in its different degrees, is generally, in all stages of the disease, the most marked and constant symptom. This state continues for about a week. Towards the fourth day the skin becomes moist, sometimes the hemorrhage is renewed, or the nose becomes moist, the crusts which obstruct it are loosened and detached by the mucus secreted by the nasal membrane; the patient frequently sneezes, the tongue becomes moist, clean and more red, at first at the point, and afterwards gradually towards the base. An easy and copious expectoration supervenes, if the chest had been attacked, or the sputa are merely formed of thick and tenacious mucus. A transpiration, or even a general sweat, *halituous*, and of a peculiar

odour, makes its appearance; the urine flows more abundantly; it becomes turbid, high-coloured and sometimes presents a copious, whitish sediment, or a mucous cloud: there is sometimes diarrhœa, or only some liquid stools.

When the disease terminates happily, the delirium ceases, the patient awakes as it were from a dream or a state of intoxication, and some suddenly regain their intelligence; their looks become animated, they are astonished at every thing around; their insensibility and indifference disappear; the organs of sense recover their activity, but the hearing remains hard, the noises in the ear continue, the memory remains impaired for a long time; the strength is restored by degrees, the pulse becomes calm and equal, although it is still weak, the heart is mild and uniform, thirst ceases, appetite and sleep return. The sense of weakness which continues, is painful; every motion causes fatigue, the state of the subject gradually improves, the epidermis often desquamates; the hair falls and the nails are changed: the appetite becomes insatiable, the venereal passion becomes active. There is generally constipation, and in women the menses are slow in appearing; convalescence generally occupies several weeks.

In the *irregular* typhus, according to Hildenbrand, 1st, sometimes the delirium becomes phrenitic, the stupor changes to apoplexy; the throat and parotids are much inflamed; sometimes there is a painful point in the side, with spitting of blood; in a word, we observe the phenomena of some local inflammation. 2. In other cases, there are repeated vomiting, continual nausea, bitterness of the mouth, fulness of the tongue, oppression of the stomach, gastric embarrassment, pains of the intestines, fetor of the stools. 3. Dryness of the skin, typhomania, subsultus tendinum, convulsions, spasms, partial paralysis and hiccough sometimes make their appearance at the commencement of the attack, before any of the inflammatory symptoms have been observed, while at other times they succeed the latter either before the seventh day or towards the ninth or eleventh: In the first case the disease may instantly prove fatal; more frequently in this case, and in the second there are soon observed black petechiæ, hemorrhages, a disposition to gangrene, diarrhœa, a cadaverous odour, and the fatal termination occurs before the seventh day. 4. The inflammatory symptoms are sometimes prolonged some days beyond the seventh, notwithstanding the appearance

of nervous symptoms; or, symptoms of inflammation of the brain, the lungs, the liver or the intestines, make their appearance in the midst of the latter: a dysentery or an icterus is observed to supervene; the latter symptom sometimes appears suddenly, and likewise disappears in a short time. Worms are sometimes passed by the patient; petechiæ continue to show themselves, or they increase and change their aspect; the tongue is dry and hard; the thirst is inextinguishable, the skin dry and burning, the abdomen is affected with meteorism, and is extremely painful to the touch; universal trembling supervenes, convulsions whose duration and intensity vary, delirium with gesticulation and carphology, a sort of low indistinct muttering, hiccough, cramps in the jaws, in the neck, the bladder; palsy of the eyelids, the tongue, the muscles of the neck, of the sphincter of the anus; sometimes a rigidity of the fingers and of the extremities, a real catalepsy, trismus, or even hydrophobia. I observed this symptom and the desire of biting in a student, who died of ataxic fever, brought on by excess of study and protracted attendance in the dissecting room. 5. On other occasions, we observe after the seventh day, blackness of the tongue and sordes of the teeth, fetor of the breath, the stools, and of the whole body; lividity of the skin, large petechiæ, hemorrhages, gangrene of the compressed parts, ammoniacal odour of the urine, a bad colour of the sputa, coldness of the limbs, clammy sweat, &c. These symptoms may develop themselves at the same time with the preceding; none of them are incompatible with the continuance of many of the inflammatory symptoms. These are the cases in which death does not occur until the seventeenth, twenty-first, twenty-eighth, or even thirtieth day.

In general, the evacuations which in regular typhus occur on the fourth or fourteenth day, appear in irregular typhus before or after these periods: they occur but incompletely or they do not occur at all; and when they appear they are followed by very inconsiderable relief, or even by an increase of the symptoms.

After the disappearance of a part of the alarming symptoms in the regular as well as irregular typhus, stupor may continue, delirium may appear momentarily; the tongue may remain dry, the thirst and anorexia continue, as well as the symptoms arising from the affection of the chest or of the abdomen, meteorism, derangement of the excretions, weakness, slowness or frequency

of pulse and prostration of muscular force.   A secondary dis-
ease sometimes makes its appearance.

During convalescence there is sometimes insomnolence, the
appetite does not return, and the repugnance to motion continues;
there remains great weakness accompanied with abundant sweats;
there is obstinate constipation; the subjects are irascible, ill-hu-
moured and melancholy; the blistered surfaces become the seats
of obstinate ulcers, and those of the parts which support the
weight of the body, are cured with difficulty; the embonpoint
and the strength return very slowly.

Finally, there is a typhus characterized solely by a slight stu-
por which continues fourteen days, and by abdominal pains of
little importance.

Such is the description of the symptoms and course of regular
and irregular typhus, according to Hildenbrand.   We shall now
consider what he says with regard to the mode of termination of
these diseases.

On post mortem examination: 1. When death supervenes
after the domination of the general vital turgescence, after ema-
ciation and paleness of the external parts—relaxation of all the
sphincters, coldness of the extremities, a general cold and clammy
sweat, a small, weak, unequal, intermittent pulse, decubitus on
the back and universal tremor; and when intelligence has re-
turned a short time before death, after delirium and stupor, the
parts are found soft, flaccid, without elasticity, almost friable,
and there is an abundance of gas in the abdomen.   The venous
blood is watery, without consistence.   This state is remarked in
a higher degree in some organs which had been principally af-
fected during the disease; for example, in the intestines.   The
external gangrenous spots are more extended and numerous in the
parts which had been compressed before death.   2. If death
occurs during the first days, or even at a more advanced period
of the disease, when the face is swelled, the eyes protruded,
the cerebral functions annihilated, and the voluntary muscles pa-
ralyzed, the vessels of the brain and its envelopes are found *en-
gorged,* and sometimes an extravasation of fluids is observed.
3. When the cerebral symptoms have been at first extremely
mild, afterwards more considerable and rapid in their progress,
and those symptoms supervene which have been mentioned
alone, if death occurs after an evacuation on the fourteenth day;

we find an inconsiderable engorgement of the brain without ef-
fusion. 4. When the symptoms of cerebral inflammation, men-
tioned above, manifest themselves before a fatal termination,
which occurs at a late period of the disease, and on no definite
day, abscesses are found in the brain, or on its envelopes. 5.
If the general accidents of a nervous state of erethism or de-
pression have preceded the fatal termination which occurs on the
critical days, after a high exacerbation, at an advanced period of
the disease, we can discover nothing which could occasion death;
softness of the brain, which some have pretended to observe, it is
very difficult to ascertain with accuracy. This kind of death does
not differ from the first, except as the latter supervenes in a gra-
dual manner, while the former often occurs unexpectedly.

The patient may perish from suffocation when the lungs have
been affected.   Death occurs in some cases very slowly, after
vertigo, blindness, imbecility, cough, dyspnœa, chronic hæmop-
tisis, hypochondriasis, cramps of the stomach, jaundice, affec-
tions which indicate chronic inflammation of the brain, the
lungs, the stomach, the liver and intestines.

The first of these modes of fatal termination, is the conse-
quence of excessive evacuations, of the prolonged duration of
the disease, of too severe a diet, of deficiency of stimulants, or
of too strong an excitement, imprudently produced: according
to Hildenbrand, it is not the most common.   The second mode
is not uncommon, and is principally observed in plethoric sub-
jects.   The third occurs in men whose heads are weak, in men
of science who study much, after strong moral affections, and in
persons addicted to spirituous drinks.   The fourth is not rare;
the fifth is the most frequent of all.   Death by suffocation rarely
occurs.   It must be remarked that death occurring very slowly,
in consequence of a secondary disease, as they say, is more com
mon than is thought.   It then appears that, according to Hilden-
brand, we most frequently find no traces on examination after
typhus.   Yet this author remarks that "the *inflammatory state,*
sometimes slight, at other times severe, of the *intestines,* be-
longs to the *constant* characters of typhus in its first period;
that it is *very seldom* wanting; and that traces of it are *always*
found on dissection."   And in another place: " It is proved by
dissection, that inflammation of the intestines is a phenomenon
extremely common in typhus; and that this inflammation should

be classed among the fatal accidents which are observed, especially when there is gangrene." He adds, it is true, that this inflammation produces death, by occasioning weakness, and he assigns to this kind of death, the lesions pointed out by him as observed after the first mode of termination of typhus; that is to say, that in observing the direct traces of inflammation of the intestines, he thinks he beholds the traces of weakness produced by this inflammation; but at least the error here, is only in the explanation; the contradiction is only in the language, the facts remain in their purity for him who can discern them in the midst of this scholastic darkness.*

Who would not be astonished at this similarity of sentiment which prevails among five authors, after we have rejected their theories, in which alone they differ. Of what importance is it that Chirac attributed the malignant fever of Rochefort, to the presence of a thick blood in the arterial ramifications, the obstruction of which produced, according to him, engorgements and gangrene of the viscera; that Pringle ascribed the typhus of the English armies to a relaxation of the fibres, to a corruption and putridity of the humours; that Poissonnier Desperierres referred that of the French sailors, to a diminution or suppression of the insensible transpiration, and to a depravation of the humours, the evacuation of which, had been checked; that Pinel attributed the typhus of 1814, to adynamy; that Hildenbrand ascribed the typhus, which he observed during twenty years, to a debility of the animal system with diminution of the muscular powers, and of the sense of feeling. These errors had but little influence upon their practice, but if they were in error with regard to the proximate cause of these diseases, if they only caught a glimpse of, and, if some among them entirely misunderstood the state of the organs affected in these diseases, they are enti-

* It would here be proper to mention the researches of M. Louis upon the typhoid affection, had this not been already done in the preceding chapters. This physician has really confounded adynamic fever with sporadic ataxic fever, under the improper name of typhoid affection. He has never observed typhus, properly so denominated, that is to say, that which reigns epidemically. The reader of his book should not lose sight of this remark; otherwise the denomination of which he has made choice, might induce the belief that M. Louis had seen other patients than those of *la Charité*, before his departure for Spain.

tled to our thanks for having furnished valuable facts which throw light upon the nature and seat of these epidemics; in the same manner as the daily observation of sporadic fevers reveals their nature and seat. Unless I am deceived with regard to the analogy of these diseases, the problem may henceforth be considered as solved.

After the remarks which have been made, the reader must doubtless think, if he at all assents to the opinions expressed in the preceding chapters, that

1. Typhus fever presents no other symptoms than those of the inflammatory, mucous, adynamic, and ataxic fevers, diversely combined, but always in such a manner, that, either from the commencement, or in the course or decline of the disease, the encephalic symptoms predominate over the others.

2. These symptoms are but the effects either of a gastro-enteritis, propagated to the liver, the brain, or the heart, or of a primitive encephalitis, simple, or complicated with gastro-enteritis, hepatitis, inflammation of the skin, or with these different inflammations existing together.

3. Typhus leaves traces of inflammation, most generally in the meninges or the brain, very often in the stomach and intestines, sometimes only in the lungs and encephalon, often at one and the same time, in the encephalon, stomach, intestines, and lungs.

We may conclude, that typhus is sometimes a gastro-cephalitis, an entero-cephalitis, a pneumo-cephalitis, a pleuro-cephalitis, a hepato-cephalitis, and sometimes a primitive encephalitis, simple or complicated with inflammation of the stomach, the intestines, the liver, the lungs, or the pleura.

The description of typhus by Hildenbrand, directly supports these propositions. His description of typhus is too general and too abstract a picture of all the diseases which have been designated by the name of typhus. This picture is not found complete in nature; only its parts are there found, and for their assemblage we are indebted to the bold hand of the author. The exposition of what this writer calls the anomalies of regular typhus, presents with striking accuracy, the different diseases observed in all the typhoid epidemics. Stupor, and some other cerebral phenomena, were symptoms which belonged in common to all these diseases, and in all the encephalon was a seat of the disease.

The observations I have made in the preceding chapters, with the view to demonstrate that neither adynamic nor ataxic fevers are referrible to weakness, and that if the word *ataxy* gives an exact idea of the apparent incoherence of the symptoms, it cannot but give a very incorrect idea of the state of the organs affected in these fevers; and the observations there made with a view to prove that the traces of inflammation found after these fevers are not the effect of weakness, nor of the fever, render it unnecessary here to attempt to demonstrate that the symptoms of typhus, and the traces which it leaves in the body, do not authorize us to conclude that weakness is the proximate cause of these diseases. I have nothing to add to what has been said on this subject in the preceding chapters; the substance of the present chapter seems to me to furnish irrefragable proofs of the principles there inculcated. I invoke the experience and authority of past ages, of celebrated men, even of the adversaries of physiological pathology, and they attest the truth of the facts which I have laid down.

With Hildenbrand, M. Broussais does not admit the existence of sporadic typhus; this disease depends solely, he remarks, on the impression made upon the economy by a miasm emanating from the decomposition of organized bodies, or from the body of a person affected with the disease. At its highest degree of intensity it acts violently on the nervous system, paralyzes its energies, and kills in a few moments without permitting any reaction. This state of paralysis, characterized by stupor and prostration, may continue several hours, or even several days; after which, febrile reaction develops itself, if the activity of the miasm has not been very intense. This reaction is nothing but a phlegmasia of the mucous membrane of the lungs, and of the gastric surfaces, the absorption of the miasm being affected by these membranes in a still greater degree than by the skin. Typhus is then, according to M. Broussais, a gastro-enteritis, generally complicated with inflammation of the bronchia. " These two phlegmasiæ," he remarks, " are the result of a true poisoning, somewhat analogous to that produced by mushrooms, or spoiled fish, and having all the characters of poisoning. The liver is secondarily irritated, and its secretion more or less increased. This irritation is the more intense as the miasm is more active. The brain," he says, " is not affected primitively, except in conse-

quence of the moral affections, of nostalgia, and of heat; but it always suffers much through sympathy, and sometimes to such a degree, that its irritation assumes the character of a true phlegmasia, and becomes as serious as though it were primitive." He remarks farther: " The irritation of this organ, *generally consecutive* to that of the gastric passages, is, nevertheless, frequently primitive in spring, and during the heat of summer. The bronchial irritation presents itself almost always in winter, and is, in a great measure, the cause of the extreme mortality of typhus in cold countries. In typhus with febrile movement, the principal danger is not apprehended from general collapse, but from the disorganization of the three principal viscera, and likewise of the liver and other tissues, if they are affected. The fatal blow is struck during the inflammatory period of the commencement. The phlegmasiæ developed under the influence of this miasm, do not differ from other phlegmasiæ, except in the facility with which the organic excitation ceases, and is succeeded by the torpor, called adynamic. Now, in proportion to the intensity of the irritation, is the rapidity of this change, as is likewise the case in inflammations independent of deleterious miasms."

It would be wrong to conclude, that M. Broussais regards typhus as a disease, *sui generis*. When the period of sedation, which is always of very short duration, has ceased, he sees nothing in the disease but a phlegmasia involving several of the principal organs, and eminently disposed, from its intensity and extent, as well as from the incessant operation of unfavourable circumstances, to terminate in disorganization, and the general cessation of organic action.

M. Broussais has not given sufficient prominence to the constancy of cerebral irritation in typhus; it is this constancy which should characterize typhus, if it were rational to multiply species in pathology, as has hitherto been the practice. M. Broussais has limited too much the number of cases in which cerebral irritation is primitive: these cases are not unfrequent, even under the influence of cold, which is certainly the agent most disposed to produce a sedative impression on the brain, and afterwards to occasion a high reaction in the membranes of this organ. I even think that this reaction is more frequently primitive in cold than in warm countries. The torpor into which the system is thrown

on exposure to intense cold, and the acute pain around the cra-
nium and at its base, which succeeds, where death does not su-
pervene during this stupor, are well known.

It has been remarked, that Hildenbrand considers typhus an
essential, primitive, and *peculiar* fever, sometimes inflammato-
ry, sometimes nervous and putrid, and which may assume at
once these three characters; that, according to Pinel, it is a pe-
culiar disease, in which the symptoms of adynamy and ataxy
continually appear, either conjointly or separately: consequent-
ly, these two authors agree in regarding typhus as a *special* mor-
bid state.

This *speciality* is not demonstrated by the traces left by ty-
phus in the body: for these are precisely the same as those of
other fatal fevers.

This speciality is not in the symptoms, for these are the same
as those of other fevers, and, at the commencement, they are those
of the inflammatory, gastric, or mucous fevers; a difference in the
intensity and duration of the symptoms cannot constitute typhus a
peculiar disease. Is this *speciality* to be found in the predisposing
and occasional causes? This cannot be the case, since these are
the same as those of all fevers which frequently prove fatal; with
this difference, that instead of being confined in their operation
to a small number of subjects, they affect multitudes, a whole
camp, a prison, a hospital, a ship, or even a town or a province,
although in general most of the inhabitants of these different
places escape the ravages of the disease.

Are the constancy of the stupor and the propagation of the
disease the only proofs of this special character?

But, since the predisposing and occasional causes, and the
symptoms, with a single exception, as well as the organic le-
sions, are identical in adynamic, ataxic, nervous and typhus fever,
is it rational to consider the latter as a disease *sui generis*, because
it is *constantly* characterized by a symptom, which is frequent-
ly met with in other fevers, and which, indeed, does not make
its appearance in every patient, during an epidemic typhus. Phy-
sicians of the army are well aware that among patients presenting
the *stupified aspect*, there are always some to be found who are
on the contrary in a permanent state of convulsion, even till
death: shall it be said that these patients are not labouring under
typhus, although they are attacked under the same influences and

although they present the same symptoms with a solitary excep-
tion? If it be asserted that it is not the stupor alone, but the
union of this symptom with a fixed idea, which indicates a spe-
cial character in typhus, this argument will convince no one; for
it is not uncommon to observe sporadic ataxic fevers with fixed
hallucination, the predominance of some chimerical idea, as well
as stupor.

Must we believe with Hildenbrand, that typhus is a peculiar
disease, because persons in health contract it when they inhabit
the same place with those affected.   But this is a character com-
mon to all fevers which propagate themselves in this manner.
Now, since these epidemic fevers differ from sporadic fevers only
in the intensity of the symptoms and the number of organs af-
fected, it remains only to inquire why they first affect so great a
number of patients, and why they occasion so great a mortality.
It has already been remarked, that they are derived from causes
whose influence extends to a great multitude: this is to a certain
extent an answer to these two questions.   Now, if it be asked,
why persons who have experienced neither depressing moral af-
fections, nor privations, nor fatigue, nor excessive evacuations,
who have abstained from all excess, and have as much as possi-
ble avoided exposure to humidity, cold and heat, nevertheless
contract typhus from visiting places in which it prevails, or by
receiving into their houses the affected, the answer is, that those
who were first affected, did not contract the disease from any
person, and that consequently in them, it was not specific; that
others contract the disease, because it is the property of exhala-
tions emanating from the bodies of all patients, crowded toge-
ther in apartments without ventilation, to determine typhus in
persons in health who respire them; if by their constitution or
by the circumstances under which they live, they are at all pre-
disposed to contract it.   Now, the typhus of the latter and that
of those first affected, being absolutely the same, as it regards
their symptoms, progress, and post mortem traces, I draw the
conclusion that neither is a disease *sui generis.*

Typhus, developed under the influence of miasmata, does not
differ from sporadic typhus, except with regard to the sedative
impression, which sometimes occurs at the commencement of the
first, and is considered by M. Broussais as a paralysis of the ner-
vous system; he thinks that this period is generally of short du-

ration, although he seems to grant that it may last some days. He thus greatly contracts the duration of that state of debility, which, according to the pathologists of our days, constitutes typhus, from the first appearance of its phenomena until its termination, and which, according to them, continue to exist even in convalescence. Yet, M. Broussais has not sufficiently limited the time during which this sedation continues. In the first place, it is by no means observed in all cases of typhus; when it does occur, death is almost always the immediate effect; if life be not suddenly extinguished, an afflux of blood to the brain occurs, and, if the rapid occurrence of the fatal termination does not permit us to find manifest traces of inflammation of the brain, we observe at least a remarkable fulness of its blood vessels, a redness or even a general softness, which sufficiently indicates that the brain has suffered, and that it has not been only directly debilitated. I do not, however, deny this debilitation, and I even believe it very important to recognise it with a view to the treatment. I, however, consider its existence as very uncommon. It is besides very difficult to know when it does occur, for the sudden afflux of blood to the brain may likewise determine the appearance of a similar torpor. We should respect its existence, and be on our guard against it in the case of typhus, developed under the influence of miasmata, when the disease commences with this symptom.

Among the phenomena of typhus, there are some which merit particular consideration, since a physiological examination of them throws a bright light upon the nature of the exanthems. It has been remarked, that about the fourth day we most frequently observe the development of small spots, of a clear red, sometimes livid, generally rounded, somewhat prominent at their centres, sometimes perceptible only to the touch, varying in diameter from a line to a line and a half, numerous on the chest, the back, and the loins; more rare upon the belly, more rare still upon the arms and thighs, very seldom observed on the hands and feet, and still less frequently upon the face. About the tenth day these spots disappear gradually, leaving a desquamation of the epidermis; sometimes they disappear suddenly, at a much earlier period. Between these spots, we sometimes observe small streaks, resembling those produced by intense cold, and small pimples, surrounded by inflammatory areolæ, of little extent.

The skin does not alone participate in the morbid state of the viscera; the sub-cutaneous cellular tissue, and certain glands, are very frequently inflamed.

A painful swelling makes its appearance in the region of the parotids, sometimes in the commencement, at other times in the course, generally towards the termination of the disease: it is sometimes attended with redness, heat, lancinating pain; suppuration afterwards occurs, and a spontaneous opening of the abscess, which is generally formed in the cellular tissue surrounding the gland, sometimes in that which enters into the structure of this organ; occasionally there is only pain, and no swelling. When this inflammation supervenes, the petechiæ generally disappear.

I have witnessed the development of enormous phlegmons in the cellular tissue of the legs, sometimes after the application of blisters, and sometimes when they had not been applied; these phlegmons furnished an extraordinary quantity of pus.

In young subjects, in whom the lymphatic apparatus predominates, the glands of the groin increase in size, and become painful; but these symptoms are rarely noticed by the physician: in the first place, because the patient seldom thinks of mentioning them during the period of intensity; and, afterwards, because the swelling disappears, or, at least, diminishes much, and the pain is confounded with that experienced in the loins or in the thighs, when the patients have recovered their intellectual faculties, and are capable of remarking them. I do not think that the frequency of these appearances have been remarked: having observed them in the highest degree of intensity, I am well assured that they occur in a great number of patients.

Hildenbrand says, that in certain cases, gangrenous spots and carbuncles make their appearance. M. Desgenettes saw, in Torgau, a town in which he encountered the typhus with the same courage he had shown in braving the dangers of the plague in Egypt, a patient affected with typhus, in whom an anthrax made its appearance.

The different symptoms which have been enumerated, have frequently caused typhus to be denominated *purple, petechial,* or *pestilential* fever. Some Italian physicians still assert that these spots, or petechiæ, essentially constitute typhus, and that the other phenomena are only secondary; but they by no means

appear in every case of typhus, and they are not the cause of
the danger of the disease; they never precede the develop-
ment of the disease, although, in a few instances, they are
among the first symptoms. These spots, or petechiæ, the
inflammation of the parotids, that of the cellular tissue of the
limbs, or of the lymphatic glands of the groin, are not the in-
separable phenomena of typhus; they only indicate that the
skin, the sub-cutaneous cellular tissue, the parotids, and certain
lymphatic glands, participate in the morbid condition of the di-
gestive mucous membrane, of the encephalon and other viscera,
in the same manner as the different affections of the skin are the
sympathetic signs of gastritis and chronic hepatitis. I have seen
a woman upon whose face a large rosy blotch made its appear-
ance every time she drank a small quantity of pure wine, and
continued for fifteen or thirty minutes. After a strong moral
affection, and a sudden redness of the face produced by it, I
witnessed the development of ecchymosis, of a transient cha-
racter, upon the delicate tissue of the skin, in a girl of seven
years of age, possessed of great sensibility. Twice, on the re-
turn of autumn, her skin was covered with rose-coloured or vio-
let spots, at the same time that there were symptoms of gastric
irritation. Petechiæ and inflammations of the parotids, are ob-
served particularly in young subjects in the course of adynamic
and ataxic fevers, which do not arise either from putrid animal
or vegetable exhalations, nor from miasmata generated by the
bodies of patients. I have seen, in a hospital by no means
crowded, the sudden development of a phlegmon, below the
left inguinal region, and the rapid supervention of gangrene,
during the progress of a sporadic gastro-cephalitis, attended with
irritation of the liver.

These inflammatory affections of the cellular tissue, the skin,
and the glands, when the digestive organs and the brain are ir-
ritated to a high degree, are facts, the explanation of which we
must seek in that incontestable law of the organism, in virtue of
which, irritation manifests itself in several organs with a facility
proportioned to its intensity and extent. Hildenbrand was well
aware that, to account for the production of typhus, it is not
necessary to suppose an absorption of the emanations or mias-
mata.

To what distance can putrid vegetable or animal effluvia be

transported, or miasmata exhaled from the bodies of men in health, too closely confined, or from patients generally, or ty-phus patients in particular, without losing the property of de-veloping grave diseases or typhus? Can they be conveyed to a distance by merchandise or clothes? Can they be carried by ves-sels over the ocean? It is not possible to answer most of these questions, except by conjectures, because they can be but indi-rectly submitted to the test of experiment. Were these mias-mata visible, or were they possessed of any peculiar odour, the solution of these problems would present no difficulty. A dis-ease appears in one country, and shortly after manifests itself in another: would it have appeared in the latter, had all communi-cation with the former been interrupted by land, by water, and even by the atmosphere? If the disease be transmitted from one country to another, in what manner is this transmission effect-ed? We are not possessed of sufficient data to render the solu-tion of these problems practicable.

It is impossible to determine to what distance effluvia from marshes, common sewers, camps, cemeteries, hospitals, prisons, or ships, may be carried by the winds. It is probable that the same blast that wafts them to a distance, disperses them at the same time; unless it be in a valley, or a long and narrow defile. We do not know at what degree of rarefaction these effluvia be-come innoxious. All that is known upon this subject, is, that epidemic and malignant diseases have developed themselves in places exposed to winds blowing from a marsh, an hospital, a ce-metery, or a vessel, &c.

Miasmata generated by healthy human bodies, confined too narrowly together, do not appear ever to extend to a distance; it is sufficient precaution against their action to avoid approach-ing the door of the apartment on the instant of opening it, and to keep the windows open.

The effluvia from the bodies of patients labouring under sporadic fevers of slight intensity, moderate phlegmasiæ of the head, chest, or limbs, have in general, but little injurious effect, even on the persons who sleep with them. But when a great number of patients, of whatever kind, are crowded together in a close place, without sufficient ventilation or attention to clean-liness, the symptoms become aggravated, and the phenomena of typhus manifest themselves; especially when the patients are af-

fected with gastro-enteritis of great intensity, and accompanied with adynamic symptoms. Almost always, some of the physicians, surgeons, or attendants, and even the apothecaries, who usually do not touch the patients, as well as visiters, who remain but a short time, contract the typhus.

On returning to their homes, they frequently communicate the disease either to those who are constantly with them, or to those who are in their company even for a few moments, when their disease is intense, and proper attention is not paid to ventilation and cleanliness.

Is it possible for a man, coming out of an hospital or chamber, in which typhus prevails, to communicate the disease without having contracted it himself? It is not probable, that this can occur, or certainly it has not frequently occurred; for it appears that those who inhabit the same house with physicians, or who frequent it, do not contract the typhus when the latter are not affected.

From these observations, we should be led to believe that stuffs and clothes are little capable of becoming the media of the propagation of typhus: but, if this be true with regard to the clothes of persons visiting the sick, the same does not appear to be the case with the effects of the patients. The wounded, placed in a chamber which, within a short time, has been occupied by men affected with typhus, soon contract the disease, if the bed-clothes have not been perfectly cleaned, and the air of the apartment entirely renewed; now the communication of typhus in this case cannot be attributed solely to the latter circumstance. Hildenbrand thinks that typhus miasm may retain its activity for three months, without, however, assigning any reason for his opinion. Are these miasmata dangerous, and do they retain the power of producing typhus, in proportion to the length of time during which the substances to which they adhere, have been confined in a close place? This is probably the case, although we must not attribute too great an influence to miasmata: they possess but little when local circumstances and the state of the atmosphere do not favour the development of the disease.

The epidemic, described by Poissonnier Desperierres, proves that the typhus of ships may communicate itself to the inhabitants of a port, and that the propagation of the disease is effected in the same manner as among land forces.

Putrid effluvia, and miasmata are not the only cause of typhus; this disease manifests itself, as I have already said, under the influence of all those causes, which occasion sporadic adynamic, and sporadic ataxic fevers. Among these, some are more favourable than others to the development of typhus, and the indirect production of the miasmata which propagate it: these are unwholesome provisions, dampness, depressing moral affections, circumstances, without the existence of which, the typhus miasm is innoxious, and which, without the occurrence of these miasmata and putrid exhalations, can originate typhous epidemics. M. Desgenettes has remarked, that prolonged humidity may superadd to the phenomena of typhus, some of those of the plague.

Upon what organ do putrid effluvia and the typhus miasm primitively act? This question is not of easy solution. The skin absorbs but little: the mucous membrane of the nasal fossæ, of the mouth, and of the air-passages absorbs more: absorption is of great activity in the mucous membrane of the digestive canal; but the bronchial surface is more exposed to the influence of the miasm, than the others; and, consequently, if it be ever demonstrated that these exhalations really penetrate into the veins, and are conveyed into the whole arterial system, we must conclude, that they enter into the organism through the lungs, whence they are transmitted to the heart, the brain, the digestive organs, and other parts of the economy. But there is no certainty that they are absorbed, and their morbific action generally manifests itself, first, on the gastro-intestinal mucous membrane, which, however, can be directly affected but by the small quantity of deleterious gas with which the saliva and food are impregnated. It may here be remarked, that animal substances in a state of putrefaction have been injected into the veins, and have occasioned inflammation of the viscera.*

Until it has been demonstrated, that it is not the skin which transmits the miasm to the organism, it will be proper to preserve it as much as possible from their impression; but it would be both absurd and dangerous to neglect such precautions as may protect the bucco-bronchial membrane. It is much to be desired, that the part performed by this membrane and the skin,

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* Majendie, Gaspard, op. cit.

in the development of typhus, were exactly known, when it results from these effluvia, as we should then better know what precautions were proper against their action. We, however, must not neglect those measures which prudence points out; while, at the same time, the physician must not permit any fear of personal safety to interfere with the discharge of his professional duties.

It is much more important to know, with a view to practice, what are the organs affected in typhus, and to ascertain the manner in which they are affected; for this is the only source from which we can derive the indications, to be answered in all diseases of whatever character.

I have pointed out the measures which government should pursue, to prevent the development of epidemic adynamic fever: the same precautions should be taken against the development and propagation of typhus. I shall only add in this place, that when typhus originates from the effluvia of a low, damp, or marshy soil, conjointly with a high atmospheric temperature, and when the disease has made its appearance in the badly built, filthy, damp, and very populous parts of a town, the inhabitants should be obliged to desert their habitations, and take up their abode, not in the neighbouring towns or villages, but in barracks constructed with the utmost care, and if the country permits, situated upon an eminence.

When typhus develops itself under the influence of humid cold, the inhabitants generally shut themselves up in confined and heated apartments, and thus become more susceptible to the causes of the epidemic. Recourse cannot, however, be had to the measure which has just been pointed out, for by this means they would be still more exposed to the action of cold and humidity: all we can do in such cases, is to prevent their communication with the sick, and to keep the latter separate.

The application of these precepts presents great difficulties, especially in the details. We must either abandon a frightful disease to itself, and permit its extension, or inspire the inhabitants with a sense of fear, which is one of the conditions most favourable to the development and propagation of epidemics.

Treatment of Typhus.

To prove that therapeutic measures have always been founded upon pathological theories, is certainly to demonstrate that this dependence will always exist; and consequently, that it is important to have the most definite ideas of the nature and seat of disease.

To combat the heat and rarefaction of the blood, and to prevent its viscidity; to give a shock to the liver and lungs; to deobstruct the vessels which carry the bile, and to promote its flow; to diminish the distension of the vessels and remedy the inflammatory disposition of the viscera, and combat internal and external inflammation; to preserve the blood from the alterations which might be occasioned by bad *ferments* contained 'n the stomach and intestines; finally, to prevent the rupture of the vessels of the brain, the liver and digestive canal, and the erosion of the membranes of the latter: these were the indications which Chirac thought were to be fulfilled.   With this view, he recommended bleeding from the foot, emetics, purgatives, mucilaginous drinks slightly aromatic, or those prepared with vegetables reputed anti-scorbutic, oils, stimulants, sometimes astringents, and absorbents.   When from the commencement, the pulse was depressed, with cold skin, and when, in a word, reaction had not yet been established, he prescribed the lilium, the confection of hyacinth, saffron, laudanum, sal ammoniac.   Afterwards, when the skin became hot, he gave the decoction of madder, of the great celandine, the wild endive, strawberry, the veronica, borage with the tartrate of potash, the sulphates of soda and potash, or the nitrate of potash: he then resorted to the abstraction of blood.

Blood-letting, always practised at the commencement, should, according to Chirac, be abundant in proportion to the weakness of the functions of the viscera most irritated; it was often necessary to repeat it several times in the space of twenty-four, or even of twelve hours; sixteen or twenty ounces of blood were drawn every three hours, until the pulse became less tense. Bleedings, less copious and less frequent, were, according to Chirac, very disadvantageous; and that they might be more powerfully revulsive, he always opened the saphena, and not the

veins of the arm or neck. To prevent syncope, he made the pa-
tient lie with the head depressed, with a little water or wine in the
mouth; abstracting only one or two ounces at a time, or twelve
or fourteen ounces in a quarter or half an hour.   Immediately
after the bleeding, on the first or second day he gave to vigo-
rous adults from *four* to *six* grains of tartar emetic in four or
five spoonfuls of broth: to delicate individuals he gave but four
grains of this salt in two or three ounces of manna: he after-
wards administered a mucilaginous or slightly aromatic drink.

When the patient had been badly nourished, and the pulse was
feeble and soft, he abstained from the abstraction of blood, and
immediately resorted to the tartar emetic.

When, after having employed these different means, the face
was wan and leaden, the eyes dull and sunken, the pulse small,
frequent, and unequal, and the habit of body cold; when there
was continual faintness, nausea, vomiting, colliquative diarrhœa,
serous, green, black, and bloody dejections, an extraordinary
prostration of strength, an intolerable weight of the head, re-
sembling drunkenness; although the measures which have been
pointed out, still appeared to him to be indicated by the nature
of the disease, he still had recourse to those which he employed
before the establishment of the reaction; that is to say, to lilium,
sal ammoniac, saffron, &c.

Independently of this general method of treatment, he parti-
cularly recommended tartar emetic, purgatives, diascordium, the
diaphoretic antimony, diacodium, laudanum, carbonate of lime,
oil of sweet almonds, manna, the sub-carbonate of potash, Arme-
nian bole, ipecacuanha, infusion of the Provence rose, balaustium,
sumach, and emollient lavements, as remedies for the diarrhœa,
according as it was stercoraceous, lienteric, bilious, or atri-bilious.
When there was prostration, he sometimes administered lave-
ments of putrid wine, or of wine mixed with theriaca.   He com-
bated constipation, suppression of urine, hemorrhage, nausea,
and vomiting, as well as the delirium and stupor occasioned by
phlegmonous inflammation of the brain, by bleeding, emetics,
and purgatives; and the stupor caused by *phlegmono-œdema-*
tous inflammation of the brain, by the lilium, sal ammoniac, &c.

Who could believe after what has been said, that Chirac was
desirous that as much care should be taken to prevent *gangre-*
nous inflammation of the stomach and intestines as that of the

brain and liver? He earnestly recommended to commence by
blood-letting, and to repeat the measure as often as the intensity
of the symptoms demanded it, at whatever period of the disease,
except when there was no reaction either at the commencement
or towards the decline.   He recommended the internal use of
narcotics, when the viscera were irritated; and he remarked that
the viscera are often engorged and inflamed, even when the pres-
sure of the abdomen did not appear to occasion any pain.   He
censured the employment of *strong cordials and diaphoretics*,
and strenuously opposed the practice of the English and Ger-
man physicians; who, beholding in malignant fever only the ef-
fect of a subtle poison, were profuse in the use of alexiterics.
In the case of nausea and vomiting, he insisted upon bleeding
and emetics; and, with singular inconsistency, approved of food,
and even of broth.

It is evident that Chirac, blinded by a humoro-chemical the-
ory, could not properly avail himself of his valuable experience
in pathological anatomy, and that instead of banishing from the
treatment of the fever of Rochefort, the confused polypharma-
cy of the school of Galen and Paracelsus, he merely insisted
more strongly upon blood-letting than had generally been done.
But he had the judgment not to abstract much blood at one time;
which, to a certain point, was equivalent to the application of
leeches: this method should always be employed when these
animals cannot be obtained.   Although he employed the means
calculated to inflame the gastric mucous membrane, while his in-
tention was to prevent its inflammation, the copious abstraction
of blood enabled the digestive organs to suffer these incendiary
measures with less injury.   His manner of abstracting blood,
debilitated the circulatory action less than the large and sudden
loss of blood.   In this manner may be explained the success of
Chirac in the treatment of this disease.   Many of his opinions
are still entertained: we hear some physicians insist much upon
the necessity of emptying the vessels; but this theoretic view
belonged more to Boerhaave than to Chirac, who applied the re-
marks of the professor of Leyden to most fevers.

Did bleeding from the foot, which was preferred by Chirac,
produce a less sudden depression of the circulatory action? This
I cannot affirm: yet I am inclined to believe, from many facts,
that this mode of bleeding is too much neglected at the present
day.

Chirac has acknowledged that in certain cases blood-letting was not indicated: it is probable that the inconsiderate disciples of this great man did not regard either this exception, nor the slowness which he advised in the abstraction of blood. The abuse of a measure, good in itself, led gradually to its total rejection.

Pringle has greatly limited the number of cases in which blood-letting should be practised. "When the fever of a marshy country is of an ardent species," he remarks, "it appears to require copious venesection; but, in general, it does not admit of so free an employment of this measure as the fever of camps. In most cases it is necessary to open a vein at the commencement of the attack, or on the day following; but repeated blood-letting may render the fever still more obstinate." Immediately after blood-letting, when he considered it proper to practise it, he administered senna and the nitrate of potash; the next day he gave a grain of the tartrate of antimony and potash, with twelve grains of carbonate of lime, and in three hours after, a second grain. He sometimes preferred twenty-four grains of ipecacuanha, with two grains of the tartrate of antimony and potash, in a single dose. At other times, he prescribed six grains of this salt, in a pint of hot water, which the patient took in doses of four or six ounces, every ten minutes. When he wished to repeat the evacuation, he gave half an ounce of some purgative salt, with tartar emetic, in the dose I have mentioned, in the same quantity of water. When these means were insufficient to arrest the progress of the disease, he prescribed bark in the dose of an ounce and a half, in half a pint of wine, or an electuary, composed of an ounce of quinine, a scruple of sal ammoniac, and a small quantity of rhubarb, and afterwards the bark alone. When there was delirium or pain of the head, he applied leeches to the temples, and a large blister between the shoulders; he then confined himself to the employment of gentle emetics, repeated lavements, and mild purgatives. "The principal rule," he remarks, "should be to *disembarrass the primæ viæ*, and for this purpose, the exhibition of tartar emetic, with a purgative salt, would probably be the most effectual measure." When he thought the digestive organs contained worms, he prescribed twelve grains of calomel, and half a dram of rhubarb.

In the fever of prisons and hospitals, besides attention to clean-

liness and ventilation, Pringle recommended, at the commence-
ment, an emetic, and, afterwards, half a grain of the theriaca,
with ten grains of the carbonate of ammonia, and a few glasses
of whey; in the evening he repeated the latter medicines. When
the fever manifested itself, if the pulse was full, he abstracted a
little blood; and, however violent the symptoms might be, he
very seldom repeated the blood-letting, even to a moderate quan-
tity.

When the head was painful, he preferred the application of
leeches to the temples to venesection:—" But," he remarks,
" in delirium, with depressed pulse, leeches are of no use; and
I am inclined to believe that they are sometimes injurious."
Sometimes he gave a second emetic at the moment the fever was
lighted up. He afterwards prescribed sal ammoniac, provided
there was not already a diaphoresis; and when the disease was
confirmed, he confined himself to the administration of the pow-
der of contrayerva, nitre, camphor, and barley water, acidulated
with vinegar.

After the lapse of three or four days, when the pulse became
feeble, the stupor more profound, and petechiæ began to appear,
he had recourse to the serpentaria of Virginia, to quinine, and
wine. If delirium increased on the use of wine, if the eyes ap-
peared wandering, and the speech short, he renounced this mea-
sure, and had recourse to blisters, continuing the employment of
whey, camphor, powder of contrayerva, and nitre. If delirium
was accompanied by slowness of speech, and without violent
agitation, he continued the decoction of bark and serpentaria, to-
gether with wine. To moderate the diarrhœa, he prescribed a
few drops of Thebaic tincture, or a julep of carbonate of lime
with chalk; finally, he opened the tumour, formed by the in-
flamed parotids, before there was any fluctuation.

All this apparatus of medicine was destined to retard the pro-
gress of the *putridity of the blood*, and the effects of that of
the humours accumulated in the primæ viæ: such were the
sole indications which Pringle endeavoured to answer. As he
opened but a small number of bodies, he was not so much struck
with the traces of inflammation as Chirac had been. His plan
of treatment was infinitely less regular than that of the French
physician. If theory is less predominant in the writings of the
English than in those of the French physician, we find in the

former but a weak exposition of the treatment, in a succession of assertions too general and vague.

More timid, and less skilful than Chirac in the employment of blood-letting, Pringle strengthened with the whole authority of his name the prejudices against this operation, which Van Helmont had disseminated. He had not the happy idea, of not permitting the blood to flow except very gradually, a precaution very proper, with a view to guard against the injurious effects which might result from the abstraction of a great quantity of this liquid. What more inconsistent than to prescribe the theriaca and whey with tartar emetic? What more contrary to sound experience, than to bleed, after having given in succession tartar emetic, and the theriaca. The prejudices of Pringle against the effects of leeches, arose entirely from his employing them with too much timidity, for he only employed two or three each time: if he sometimes used as many as six, it was only in primitive inflammation of the brain: it is probable that he was not so bold in his practice in the hospital fever; this we may the more readily believe from the fact, that in ophthalmia, he never applied more than two of those animals to the internal angle of the diseased eye. It is true, that at the commencement of this inflammation, and of that of the brain, he bled from the arm several times. Since, he very seldom practised venesection in the fever of the hospital, it is easy to explain why it appeared to him that the application of leeches was often of little benefit, and sometimes even hurtful in this disease.

Bold practitioners bring into disrepute therapeutic agents, by employing them with too much freedom; while, on the other hand, timid practitioners produce the same result by prescribing them in insufficient doses. From the same means becoming dangerous in the hands of the first, and useless in those of the second, the conclusion is drawn, that they are prejudicial in all cases.

Poissonnier Desperrieres was of opinion, that in vigorous subjects, the vascular system should be placed in a state to form *that unctuous fluid which should operate a salutary crisis,* and that in those disposed to scorbutic cachexy, while the principal disease was combated, measures should be taken against the *ulterior depravation of their humours.* His method differed little from that of Pringle, that is to say, it consisted of an

emetic in all cases, blood-letting sometimes, and universally of purgatives followed by bark.   He preferred ipecacuanha to tartar emetic: he prescribed sulphuric ether, given by drops on sugar and acidulated drinks.

Pinel recommends, in the treatment of the fever of jails and hospitals, the same means which he thought were indicated against ataxic fever in general.   He advises, in general, to excite vomiting, and immediately afterwards to have recourse to a tonic medication, that is to say, after the exhibition of an emetic he would resort to the profuse use of generous wines in repeated doses, alcohol, camphor, ether; the volatile oils, ammonia, acetate of ammonia, the alcoholized mineral acids, punch; aromatics, such as serpentaria, valerian, chamomile, and especially bark, in concentrated decoction, in water acidulated with sulphuric acid, lemonade, wine and water, light wines or beer, more or less diluted.   Who does not in this treatment recognise the plan of Pringle, with the exception of blood-letting, the most efficient of all the measures recommended by the English physician? What could have induced Pinel to discard blood-letting? Probably the theory of Brown, which, without his being conscious of it, might have influenced his judgment, and supplanted the opinions of Pringle. Putridity ceased to engage the attention of the physician, and debility took its place: thus we observe, that no sooner had science renounced one absurd hypothesis, than it was destined to fall under the dominion of another equally inadmissible, and perhaps more dangerous.   From that period, physicians attempted to combat debility by giving bark in dram and ounce doses, and lemonade by the pint: it would appear that there is some provision in the constitution of things, by which the injurious results of erroneous theories are neutralized by a fortunate inconsistency between the theoretical views, and the practical measures deduced from them.

Blisters, so liberally employed by Pringle in the second period of nosocomial typhus, were equally used by the disciples of Pinel; but since he applied them, when vitality was on the point of becoming extinct, and not when the circulation was still in a state of sur-activity, they were in his hands rather useless than prejudicial.

It has been advised, to administer a few glasses of generous wines, or a small quantity of some alcoholic liquid, on the first

appearance of the symptoms of typhus. Some physicians think that within the first twenty-four hours, the source of this infection can, in a great measure, be expelled, or the disease rendered more benign by provoking vomiting, or sweat, when, in this space of time, symptoms more or less grave have developed themselves, under the influence of deleterious miasmata. This opinion supposes two things; the first is, that these miasms still adhere to the walls of the stomach, and that they can be expelled by the mouth, or eliminated by the skin, after traversing the whole thickness of the body: the second supposition is, that the effect of these miasms is to debilitate the gastric mucous membrane, and thus render the employment of tonics proper. But nothing proves that the miasmata remain in the stomach, and still less does it appear that it is possible to expel them by emetics, or sudorifics. Those ideas are derived from the comparison which has been instituted between these miasms and poisons, a comparison more ingenious than solid: in very few cases of poisoning are emetics indicated, and certainly in none can tonics be resorted to with propriety. Were it true, that the only effect of these miasms is atony of the stomach, why not continue the use of tonics? why not from the first have recourse to the strongest stimulants, and in the highest doses? Is it not singularly inconsistent to recommend, as has been done, mucilaginous and acidulous decoctions, after vomiting? Nothing more decidedly proves the danger of tonics than this precept of Pinel. " It is in the second period, and when the symptoms are most intense, that it is necessary to make use o vinous drinks, and even of generous wines, administered at intervals." It appears then, that there was some vague notion entertained of the danger of tonics after the commencement of the disease, but there was an entire ignorance of their noxious effects at its most intense degree.

As the method of Hildenbrand contains nothing but what is either vague, or perfectly similar to those of Pringle and Pinel, instead of giving the few rules, and multiplied exceptions of the professor of Vienna, I shall confine myself to an exposition of the manner in which he treated himself when affected with the typhus, in 1795. " Whether owing to delirium, obstinacy, or a distrust of the powers of medicine, I took nothing during my disease but lemonade, and barley water, with the ex-

ception of an emetic which I prescribed for myself at the com-
mencement, after venesection. I, however, triumphed over the
disease, and, after a favourable crisis, which supervened on the
fourteenth day, I was perfectly restored. I owe my recovery
to no exciting means, such as wine, and my mind was at that
time in a state unfavourable to recovery." This narration is re-
markable on more than one account; it is in direct opposition to
the remarks of Pinel, with regard to the ataxic fever which he
contracted in 1793. " I escaped death by means of an excellent
wine, which was administered in small doses at short intervals."

The remarks of Hildenbrand prove that the abstraction of
blood is not always opposed to the development of a salutary
crisis: that blood-letting may sometimes be efficacious, although
the patient be suffering from depressing moral affections: that
this physician had no great reliance upon the efficacy of the tonics
which he recommended in his work; that an emetic, after which
the disease continued fourteen days, certainly did not abridge,
though it may have lengthened, the duration of the disease. If
we refer to what follows the preceding account in the work of
Hildenbrand, we shall be induced to inquire what could induce
him to recommend tonics, in a disease generally owing, in a
great measure, to inflammation of the stomach: " I have several
times seen," he remarks, " patients attacked with common sim-
ple typhus, who perfectly recovered under the use of lemonade
alone." If *common simple* typhus, that is, typhus which ac-
cording to the Brunonian view, depends entirely on debility,
is cured by employment of an acidulated drink; what strange
inconsistency could lead to the employment of tonics and stimu-
lants in complicated typhus, that is, typhus in which we cannot,
without shutting our eyes against all evidence, but recognise the
inflammation of one or more organs, even when we consider the
disease as a general affection?

Let us contrast with these ineffectual essays of practitioners,
skilful, but seduced by erroneous theories, the therapeutic me-
thod of M. Broussais.

Where as yet there is only malaise, dejection, slight febrile
movements, anorexia, and lassitude, alcoholic or sudorific drinks
cause the cessation of these symptoms in some subjects; while in a
greater number they increase the intensity of the disease, and
we succeed better with mucilaginous drinks and the acids. When-

ever the disease develops itself in the digestive organs, when there is pain, epigastric uneasiness, diminution of muscular force, and contraction of the pulse; internal stimulants are never proper, whatever be the degree of prostration; acids, on the contrary, are beneficial. If stercoraceous, bilious, and fetid matters are copiously evacuated, acid purgatives will give relief, while they increase the sensibility of the abdomen and the meteorism, if these symptoms depend on inflammation of the peritoneum. If the chest be particularly affected, and the pulse large, venesection is not to be practised; but local bleedings are to be employed, succeeded by stimulants to the inferior members. When the brain is more affected than the other organs, if the blood is impetuously determined towards it, blood is to be taken from the foot or leeches applied to the head and afterwards to the feet, and stimulants are then to be applied to the inferior extremities: cold water should be poured upon the head while the feet are plunged in hot water. If the circulatory motion is, as it were, annihilated, and the patient plunged into an apoplectic condition, blisters should be applied to the head and excitants of the inferior portion of the digestive canal employed. Wine and other stimulants, should not be given internally except in one of the four following circumstances: 1st, When there is general weakness and stupor, with a tongue but slightly red, and without any sign of phlegmasia of the three cavities; 2dly, When these means, instead of rendering the tongue dry and incrusting it, the thirst ardent, the skin hotter, and the nervous movements more frequent, procure a diminution of these symptoms; softness of the pulse, and dispose to a salutary diaphoresis: we must, however, discontinue their employment whenever sur-excitation is announced by the skin, the pulse, the tongue, and by general uneasiness: we then resort to the employment of acids, resuming our former measures, whenever they are again indicated; 3dly, When the febrile period has terminated, and the patient falls into extreme debility, which can no longer be attributed to an inflamed organ, that is to say, when the first moment of convalescence has arrived, we must be guarded in the employment of stimulants, lest we dissipate, by a strong excitation, the small degree of strength which still maintains vitality: finally, When there is no farther hope, and congestions increase with astonishing rapidity, notwithstanding the employment of the most powerful revulsives.

" The latter case," adds M. Broussais, " is one of extreme de-licacy: this desperate method, which is often too soon resorted to, has destroyed more than it has saved: after having adopted it in the case of certain patients, of whose recovery I despaired, its bad effects sometimes compelled me to abandon it; and I have had the satisfaction of seeing emollients and acids produce a greater effect than before the sur-excitation, and restore a patient whom I should probably have lost, had I persisted in the exclu-sive employment of one or other of these methods. *

If M. Broussais, has sometimes been exclusive in his theore-tical and practical views, it certainly is not in the passage just quoted, and which I have given literally, because it has not been properly appreciated.   We observe with how much caution this author mentions even topical blood-letting; this was in conse-quence of his thinking, at the period of his writing the foregoing passage, that it was of little utility, or even prejudicial in typhus, when at all copiously practised.   I believe, that at the present day, he is less reserved in the employment of this measure, and that he limits more the number of cases in which tonics may be used.   I believe, that he does not attach any great importance to acidulous purgatives, or rather, I believe that he no longer re-sorts to them, as he finds lavements sufficient, without their being attended with any of the disadvantages inseparable from purga-tives, which can only act upon the large intestine after they have more or less irritated the stomach and small intestine.   There is also reason to believe, that he seldom attacks the apoplectic state by strong purgative enemata.   Finally, how often do we see vital action exalted for an instant, when we pass from the use of tonics to that of emollients, only to sink more rapidly afterwards, even when we have recourse to them when vitality is almost ex-tinct?   When, from the premature administration of tonics, the symptoms become meliorated, it is not true that we owe our success to the opposing of one irritation by another; for we can-not conceive that there can be two irritations at one time on the same membrane: we can only say, that certain internal in-flammations, like some external ones, are cured by the adminis-tration of tonics.†

* Premier Examen, p. 177, 179.

† See my Treatise on Inflammation, Paris, 1824; and Thomson on Inflam-mation.

The remarks that have been made on the treatment of adynamic and ataxic fevers, render it unnecessary to enter into more ample details with regard to that of typhus, a subject as important as it is difficult, and which requires new researches and experiments, directed not by hazard, but methodically, pursued in a manner conformable to the views which have been explained.

If it be asked why blood-letting is of so little utility in typhus, while it is so generally beneficial in sporadic fevers of the gravest character, I announce that the fact is too true; but that we cannot account for it, and that we must know how to be ignorant of what observation has not yet revealed.

Dr. F. Ocks has just published on the diagnosis and treatment of typhus an incomplete compilation which may be advantageously consulted, although it possesses no merit in the department of pathological anatomy.*

* Artis Medicæ Principes de Curanda Febre Typhoide. Leipsick, 1830, in 8vo.

CHAPTER VIII.

Of Yellow Fever.

WE generally designate, by the name of yellow fever, a re-
markable variety of the synochal fever, according to Currie, of
the bilious fever according to William, of causus according to
Towne, of inflammatory putrid fever according to Deveze, of
putrid fever according to Macbride, of malignant fever accord-
ing to Warren, of typhus according to Sauvages, of pestilential
fever according to Chrisholm; finally, of ataxo-adynamic gastric
fever according to Pinel.   Is it not a remarkable fact, that this
fever has been referred to all the known kinds of continued fever,
with a single exception: viz. the mucous fever?   Is it essentially
different from those which have been mentioned in the preceding
chapters? or is it not in reality a variety of one of these?   What
is its origin, what are its causes, in what manner is it propagated?
does it require a specific treatment?   Is there any mode of pre-
vention?   Such are the questions which have been discussed with
much warmth for many years.   Certainly the solution of all these
questions cannot be expected from me, and I do not hesitate to
confess that I have never witnessed the disease; but since those
physicians who have observed it, differ in their sentiments, we
may be allowed to ask the truth in the midst of their discus-
sions.

On consulting with attention the works published on this fe-
ver, we are struck with the perfect harmony that pervades them
all in laying down the symptoms: on this account I shall confine
myself to a general description of the phenomena of this dis-
ease, without giving the particular history of every epidemic.

The accession of the yellow fever is generally sudden: it is
not, however, uncommon to observe precursory signs, which
merit some attention: these are, generally, spontaneous lassitude,

a state of languor, of general malaise, as at the commencement of many other diseases; but, often, to these symptoms are joined the following: pulse feeble, slow, profound, disappearing under the finger, or frequent, small, and intermittent; skin hot and dry, or cold and covered with a clammy moisture; features altered, mournful air, or feigned gaiety; lips pale and livid; tongue sometimes red and dry, at other times, white, moist, and trembling; subsultus tendinum; slight tremors of the limbs.

When these symptoms appear, during an epidemic yellow fever, in a plethoric individual, whose brain or stomach has been irritated, there is reason to apprehend the invasion of the disease.

After the premonitory symptoms have continued a few hours or days, but more frequently without any premonition, the patient complains of extreme prostration, inexpressible malaise, pain in the frontal and temporal regions, at the bottom of the orbits, in the loins, the vertebral column, the back of the neck, and the knees. Sometimes he is seized with a rigor, which is soon followed by a dry and pungent heat: the chilliness and heat, often alternate, as well as the paleness and redness of the face: sometimes the fever suddenly appears without having been preceded by a rigor. The face is most frequently red and animated; the eyes sparkling, fixed, and suffused; the conjunctiva injected, the light is painful; sleep is either wanting, or is frequently interrupted; an air of astonishment and fright marks the countenance of the patient; he groans and weeps: the tongue, at first red, especially upon its borders, becomes dry, rough, and is covered, as well as the teeth and lips, with a yellowish, and afterwards a blackish deposite: all these parts are dry, as well as the nostrils and throat, which are affected with a sensation of itchiness; deglutition is impeded. The patient complains of heat, and acute pain in the epigastrium, which is tense, renitent, and painful on pressure, as well as the right hypochondrium; to the eructations and nausea, succeed violent vomitings, which adds to the epigastric pain, and is provoked by drinking; there is at first constipation, afterwards abundant alvine dejections, with pain in the abdomen. When the internal heat is considerable, the thirst becomes excessive, the extremities cold, the respiration interrupted and laborious, the patient sighs profoundly; he experiences a sense of oppression, which may amount to or-

thopnœa, and sometimes a sense of pain in the chest; the expired air is then very hot, the urine is of a deep red colour; finally, the pulse is frequent, quick, and strong; it is sometimes full, especially in the afternoon, at which time the heat of the skin and the thirst are most strongly felt.

Such are the symptoms of what is called the first period of yellow fever: none of them announce indubitably the existence of the disease; but sometimes one or more nasal hemorrhages occur at this period of the disease, and the face begins to become yellow, symptoms which banish all doubt with regard to the disease.   This period, the duration of which is one or two, sometimes three, rarely four, more commonly five days, constitutes, in a few cases, the whole disease.   The symptoms gradually diminish in intensity, the patient recovers his health, and it cannot be told whether the disease has been a gastric inflammatory fever or the yellow fever, unless icterus has been present.

If the disease continues, the deposite which covers the tongue becomes more thick and black; the tongue is more dry, and the vomiting more frequent; the patient sometimes vomits white and acid mucosities, which set the teeth on edge, excoriate the throat, the tongue, and the lips; sometimes pure bile of a yellow colour, and, at a later period, a black substance, mixed with abundant mucosities, resembling soot mixed with the white of en egg, beaten up with water.   This matter, according to some, exhales an hepatic, according to others, a sanguineous odour. Black blood is often vomited before the appearance of this black matter; the stomach is then so much irritated that it rejects every species of liquid, however violent may be the thirst.   When violent pains are felt in the epigastrium, in which the patient experiences a sense of extreme heat, the pains of the loins increase in intensity; the alvine dejections are more frequent and abundant, formed of matters which are at first liquid and glairy, afterwards yellow, greenish, bloody, and, finally, blackish; in a word, similar to those which are ejected by the mouth: the urine is more and more deep, turbid, not sedimentous; sometimes a pellicle forms on its surface; it at last ceases to flow in cases which have become hopeless.   The face becomes less red, often even pale, although the conjunctiva remains injected, and the eye brilliant: the features are profoundly altered, as in those abdominal diseases which are tending to the destruction of the organism; pain-

ful dreams disturb the sleep when it occurs; the carotids beat
with violence, yet the pulse frequently becomes more slow and
unfrequent, or it resumes its natural standard.

In the course of this second period, which is shorter in pro-
portion as the preceding one has been longer, the yellow colour
of the skin most frequently appears; lassitude, increased pros-
tration, and a brighter redness of the eyes generally announce
it. It commences on the face, the conjunctivæ, below the mouth;
it afterwards appears in the form of bands, on the neck, the
chest, the thighs, and, according to M. Dalmas, along the course
of the great arteries. The icterus is sometimes confined to the
conjunctivæ, even in mortal cases: it extends with the greater
rapidity in proportion as the efforts of vomiting are more fre-
quent and violent. The wounds made by venesection, open, and
become black; a livid circle forms around the blistered surfaces.
The yellow fever cannot now but be recognised; it is, however,
no longer susceptible of being cured: the patient dies in the
midst of these symptoms, or the disease may proceed with ra-
pidity, and the third period be developed.

Vomiting becomes more and more frequent; besides the black
matter which has been mentioned, a blackish and very liquid
blood oozes from the surface of the tongue, is discharged from
the mouth, the nostrils, the anus, the vagina, and the urethra;
the dejections are involuntary; the discharge of urine is com-
pletely suppressed; the face is Hippocratic; muscular strength
appears annihilated; yet there are subsultus tendinum, tremors,
and convulsions, according to Valentin. Sensibility appears ex-
tinct, respiration is slow and stertorous; the breath is cold, the
pulse weak, small, unfrequent, intermittent; the whole body ex-
hales an infectious odour; livid spots, petechiæ, ecchymosis,
patches, and phlyctenæ, of a gangrenous aspect, appear on diffe-
rent parts of the body, and death is inevitable. In a small num-
ber of cases, the parotids become inflamed; more rarely, still,
we meet with carbuncles, anthrax, and buboes.

The entire duration of the yellow fever is, in a few cases,
from twelve to twenty-four hours, sometimes three days, but
more frequently from four to eight days: death seldom occurs
after the eighth day, unless the patient has experienced a re-
lapse, generally a consequence of indigestion, or unless a very
abundant hemorrhage suddenly supervenes.

It may not be unprofitable to draw the attention of the reader to the state of the intellectual faculties in the yellow fever. Deveze scarcely refers to it. Valentin says, that the patient falls into comatose delirium or profound coma, when the vomiting ceases or becomes less frequent, and that delirium supervenes when the black vomit and dejections appear. M. Dalmas dwells much on the fright, which, from the first moment of accession, affects patients even of the most intrepid character; delirium is sometimes observed. In no grave disease, says M. Bally, is the integrity of the intellectual faculties so completely preserved as in this: he has seldom observed delirium. This proposition seems to be in exact accordance with facts. The fright mentioned by Dalmas, is, perhaps, less a peculiar effect of the disease than the natural dread of death in a malady so often fatal.

In case of a fortunate termination of the disease, convalescence is rapid, and the strength soon re-established.

Among all the symptoms which have been enumerated, we must first distinguish those which are observed in yellow fever, much more frequently than in any other disease; afterwards, those which are constantly observed in this fever. Amongst the first should be classed black vomit, alvine dejections of the same kind, hemorrhage, and icterus: among the second should be classed cephalalgy, the lumbar and epigastric pains, which are never wanting: after these, in point of frequency, we may mention icterus, vomiting, black dejections, and hemorrhage, which occur in the greater number of cases, but which are not constant. Yet icterus is seldom absent, and even when it does not make its appearance during life, it generally manifests itself after death. Although black vomit is not a constant symptom, vomiting almost always occurs. Hemorrhage is not always observed, especially when death occurs during the first period of the disease. Suppression of urine is not more common in yellow fever than in any other grave fever; it does not always occur, and its importance, as a diagnostic symptom, has been overrated.

It is unnecessary to enter upon an analysis of the other symptoms of yellow fever, since they have been spoken of in the preceding chapters; but those which have been enumerated are deserving of minute attention.

The source of the black matter, passed by vomiting and by

stool, has been a matter of much disquisition: some have considered it as derived from the liver, others from the spleen; but since it has never been found in these viscera, and has never been observed in the gall-bladder, nor in the biliary ducts, and since nothing has demonstrated its analogy to the bile, it should be regarded as a product of the secretory action of the mucous membrane of the stomach, especially as it has a striking resemblance to what is passed in chronic inflammation of this organ, with degeneration of its parietes. The black blood, which has also been regarded as derived from the spleen or liver, appears to be only the effect of a hemorrhage from the gastro-intestinal mucous membrane.

I have never observed the yellow fever; but I have seen a case of sporadic fever in every respect similar to it; the liver and spleen were sound; the stomach and intestines contained a black matter, and their vessels were very apparent.

I have also found grumous blood in other subjects without the vessels of the intestines being more apparent; but the stomach had evidently been inflamed: there had been no yellowness of the surface.

The proximate cause of the icterus has exercised the imagination of physiologists of every period: the ancients attributed it to the presence of bile in the blood; chymical researches tend to prove that the colouring matter of the bile may be found in this fluid. In 1795, Joseph Frank attributed icterus, not to a resorption of bile, but to a sort of sanguineous extravasation, similar to what occurs in ecchymosis, produced by contusion. This opinion is not wanting in plausibility; but it would be incorrect to infer from this that the secretion of bile is not augmented in yellow fever. This secretion is evidently augmented when there is, what is not uncommon, vomiting and dejections of pure bile, of a yellow or greenish colour; besides, no one, as far as my knowledge extends, attributes icterus in acute disease, to the augmentation, but rather to the suspension of the biliary secretion, caused by irritation of the liver. Finally, it would be wrong to deny the connexion which subsists between icterus and irritation of this organ; for whether jaundice proceeds from the resorption of the bile or of one of its materials, or is occasioned by the suspension of the biliary secretion, it is not the less true that it is often a symptom of hepatitis, a fact from which

we may reason by analogy, that it announces irritation, at least of a sympathetic character, of the liver in yellow fever. Should the accusation of inconstancy be urged against me, as asserting that there is at one time augmentation, at another, suspension of the biliary secretion in this fever; it will be a sufficient answer that the elaboration of bile may be suspended, at the same time that the portion of this secretion already formed, flows into the stomach, when this organ and the duodenum are irritated. It is doubtless in this manner that icterus progresses in proportion to the efforts at vomiting.

I cannot but think that in the vomiting, of whatever character it may be, and in the icterus, we must recognise two symptoms of irritation of the stomach and liver. The pain extending from the epigastrium to the right hypochondrium, the tension and renitence of these two regions, and the increase of pain excited by pressure upon either of them, render the truth incontestable.

Cephalalgy, the pain felt in the bottom of the orbits, the redness of the conjunctivæ, the fixedness of the looks, are so many unequivocal signs of irritation of the meninges. The integrity of the intellectual faculties in the greater number of cases appears to show that the irritation of these membranes, of whatever nature it may be, propagates itself slowly to the brain. Are the pains of the loins and posterior part of the neck purely sympathetic, or do they indicate that the spinal marrow or its termination participates in the morbid state? It is difficult to believe that a part may become the seat of pain, or that a pain may be referred to a certain part, without there being lesion of this part; but it remains to determine whether this lesion be secondary or primitive: pathological anatomy must resolve this question.

Do the symptoms mentioned, authorize us to consider the disease which they characterize, as an essential fever different from all others? I think not: 1st, because the black vomit, even though it always occurred, is but a symptom, and the existence of a special phenomenon is not sufficient to constitute a disease essentially different from every other disease: 2ndly, because the black vomit depends upon a lesion of the digestive organs, which should not be studied in its symptoms alone, to acquire an exact idea of it: 3rdly, because icterus is one of the phenomena most remote from the proximate cause of the yellow fever, since it

frequently does not manifest itself until after death: is it not singular that physicians who reproach us with seeking in the red colour of the mucous membranes, the nature of several fevers, should think they find the most important phenomena of yellow fever in the citron colour of the skin? 4thly, because the colour of the matters passed by the mouth, or by the anus, or that of the skin, cannot distinguish diseases: otherwise it would be necessary to recognise red fever, green vomit, white fever, yellow vomit. What should we say of the physician who, at the present day, should assign the last denomination to gastric fever, the first to inflammatory fever, the second to cholera, and the third to mucous fever?

What are we to think of the remission which it is said is remarked in most subjects, during the course of the yellow fever? that it is not sufficiently constant to characterize in a special manner this disease; because it is not always found in the history of the particular cases reported by the authors who assign to it so prominent a place in their general descriptions of the epidemic. Analogous remissions have been observed in many fevers which have not presented the symptoms said to be peculiar to yellow fever.

To exclude the study of symptoms from an investigation of the seat of diseases would be an absurdity. The proper course is to compare them with the traces found on dissection.

We shall commence, by saying with M. Bally, that there are bodies which present to the anatomist no traces of disease, and we shall add in accordance with this judicious observer, that this peculiarity is observed, especially in those who die from the first to the third day, and on whom the disease has not had time to impress its anatomical character.*

Whether icterus has manifested itself before or after death, the skin is of a citron colour, and covered with violet, brownish patches, particularly on the parts of the body which are lowest in position. The bodies pass rapidly into putrefaction, a circumstance which obliges us to open them as soon as possible after death. This necessity of proceeding with rapidity, has the advantage of making us acquainted with the state of the organs before any alterations, except those which are the effect of the

* Du Typhus de Amerique ou Fievre jaune. Paris, 1814, p. 202.

disease, can establish themselves: but at the same time, it in-
creases the danger of these researches, so painful, and so honour-
able to him who applies himself to them with assiduity, and with
all the attention they deserve.

When an incision is made into the skin, we find the whole
cellular tissue infiltrated with a yellowish serosity, more or less
abundant.   The muscles are sometimes red and renitent, some-
times pale and soft.   M. Rochoux says, that he has found blood
extravasated into the intermuscular cellular tissue.*

It is in the abdomen that we find alterations the best charac-
terized, and the most constant.   When this cavity is opened, a
fetid odour of a peculiar nature is exhaled from it; after which,
according to Deveze, we can neither find definition nor compa-
rison.†

All physicians, who have written upon the subject of yellow
fever, agree in saying, that in the greater number of cases, the
mucous membrane of the stomach is of a more or less bright
red, or of a brownish red, sometimes ulcerated, gangrenous, and
destroyed in part of its extent, especially towards the pylorus.
These traces of inflammation are not less frequent in the duode-
num; they are more rare or less prominent in the rest of the di-
gestive canal, and especially in the great intestine.   It appears
that gangrene of the gastro-intestinal mucous membrane is not
so common as many others have considered it.

The stomach and intestines, but especially the first of these
organs, often contain a considerable quantity of the black mat-
ter, even when it has not been discharged during life.   With
this matter, clots of blood are often found mixed.   In a few
cases, instead of black matter, we find pure blood.   M. Cher-
vin,‡ who has often tasted these different substances, has per-
ceived in them a decided taste of blood, when they presented

* Recherches sur la Fievre jaune. Paris, 1822, in 8vo. p. 155.

† Dissertation sur la Fievre jaune. Paris, p. 83.

‡ Until the publication of the work which has been announced from the
pen of this distinguished physician, the following works may be consulted:
Examen des Principes de l'Administration en matiere sanitaire. Paris, 1827,
in 8vo.—Examen critique des Pretendues preuves de Contagion de la Fievre
jaune, observée in Espagne. Paris, 1828, in 8vo.—De l'Opinion des Médicins
Americains sur la Contagion ou non-Contagion de la Fievre jaune. Paris,
1829, in 8vo.—Examen des Opinion de M. Lassis, concernant la Fievre
jaune, qui a regné a Gibraltar. Paris, 1829, in 8vo.—Examen des Opinions

most of the exterior qualities of this fluid; at other times, they have appeared to him bitter and acrid, having something corrosive in their taste: this was particularly the case with the reddish matters; none of those substances are offensive, like the gas, when the body is examined a short time after death; but when the examination is delayed thirty-six or forty-eight hours, the fetor is excessive, evidently, in consequence of the commencement of putrefaction: this is by no means an essential character of the disease, although it has been thought so by many physicians.

The mucous membrane of the gall-bladder has been found thickened, and sometimes of a brownish red. The gall-bladder is often retracted, and sometimes contains black and pitchy bile, which, according to Deveze, is by no means caustic.

The liver is almost always large, gorged with blood, soft, yellow in its interior, covered on its surface with slate-coloured patches: it seldom presents traces of suppuration. The spleen generally presents no remarkable change. The kidneys are often redder than in their natural state, or, at least, gorged with blood. M. Rochoux found them inflamed in one-fourth of the bodies opened by him at Martinique. The bladder is often contracted, and its mucous membrane red throughout almost its whole extent: it contains a variable quantity of urine, often brown and sanguineous, especially when the quantity is small.

After these lesions, in point of frequency are those of the encephalon: the lesion of this organ generally consists in nothing more than the presence of a certain quantity of yellowish serosity, sometimes sanguineous, on the hemispheres or in the ventricles: the vessels are often gorged with blood as well as the sinuses, which contain a yellowish gelatinous matter, in point of colour resembling the serosity which is found in the cellular tissue: sometimes there are unequivocal traces of inflammation in the arachnoid. The cerebral substance has been examined with too little care, to permit any positive assertion with regard to its condition. It has been said to be occasionally possessed of but little consistency: some have asserted that it was more compact than in health.

de M. Castel touchant la pretendue Contagion de la Fievre jaune. Paris, 1830, in 8vo.—Lettre a M. Monfalcon sur la Fievre jaune, qui a regné a Gibraltar en 1828. Paris, 1830, in 8vo.

M. Dalmas has judiciously remarked, that lesions of the encephalon and its membranes are principally found in those individuals whose intellectual functions have been remarkably disturbed.

He says that he has opened subjects, in which he found no
other morbid traces than those of congestion of the brain, and
that, at other times, the chest alone presented traces of disease.*

It is not uncommon to find the lungs gorged with black blood,
which flows out when an incision is made into these organs: they
are covered externally with livid spots; their substance was found
by M. Bally contracted, black, and as it were burnt, in a single case.
Red, violet, and livid patches are not unfrequently found in the
lungs, as well as adhesions formed by a layer of a yellow, gelatiniform substance.   The pericardium often contains an analogous
substance, and sometimes a bloody serosity. M. Bally has almost
always found in the heart, a yellow transparent clot of considerable size, extending sometimes into the aorta, and resembling fine
jelly or amber.   Persons who have never examined bodies have
considered this appearance as very peculiar.

I must add what has been published upon this subject since
the first edition of this work, being an account of the principal
results of post mortem examinations made at Barcelona in 1821,
by MM. Bally, Francois, and Pariset.   I shall quote literally
from their report.

The skin, almost always of a citron yellow, was often marked
with brownish patches on the eyelids, the forehead, the face and
extremities: patches which must not be confounded with post
mortem ecchymosis.   The petechiæ had not disappeared, and
their colour was but little changed: they continued of a rose colour, inclining slightly to brown: they were particularly observable on the abdominal extremities, on the face, the neck and
the arms.   The arachnoid membrane was seldom opaque; the
lateral ventricles contained a small quantity of serosity. In many
of the bodies several ounces of blood were found extravasated
between the cranium and dura mater, or between the two layers
of the arachnoid membrane, sometimes also at the base of the
cranium. The pons varolii and the cauda equina, which had been
considered as somewhat atrophied in our post mortem examina-

* Rechèrches Historiques et Medicales sur la Fievre jaune. Paris, 1822,
in 8vo. p. 17.

tions in St. Domingo, presented no peculiar appearance; the lat-
ter appeared even enlarged in one of the bodies. The termina-
tion of the spinal marrow was always found bathed in a copious
collection of yellowish, limpid, serous matter, varying in weight
from two drams to two ounces and a half. There was no red-
ness of the dura mater, no opacity of the arachnoid, no inflam-
mation or thickening of the pia mater of the spinal marrow. In
one subject a reddish tint was observed on the inferior extremity
of the latter membrane. The cauda equina, which was bathed
and in some sort macerated in the fluid, was perhaps a little
softer than usual; perhaps, likewise, the sacral nerves presented
a slight degree of redness. An effusion of blood was often ob-
served at the inferior part of the dorsal and superior part of the
lumbar region, between the bodies of the vertebræ and the dura
mater. This collection of blood was sometimes found in the
sack formed by the arachnoid, always in the same region and at
the same height. The pleura, the bronchial mucous membrane,
the lungs and the pericardium sometimes presented traces of in-
flammation, or serosity, or even blood was found in them. The
fibro-albuminous clot, yellowish and transparent, was always
found in the cavities, and particularly in the right ventricles of
the heart. When there had been an oozing of blood in the
mouth, the blood sometimes appeared to be derived from the
lateral part, sometimes from the gums and tongue only, some-
times from the palate, and occasionally from the whole mem-
brane. The stomach, in a few cases, presented no inflammation;
frequently, however, redness, injection, and apparent traces of
ecchymosis appeared on the mucous membrane. These inflam-
mations, generally superficial, reddish, sometimes inclined to
violet, were disseminated on the internal surface of the stomach,
and particularly towards its orifices. They sometimes appeared
in small, round, distinct spots; sometimes in oblong patches,
which were confluent and occupied a larger surface. In other
cases, the whole extent of the internal membrane was inflamed.
If the inflammation existed in the highest stage of intensity,
brownish points, of greater or less extent, were discovered:
these points were easily raised and detached by the knife, and
the position of the mucous membrane was thus reduced to a
pulp. The small intestines generally participated in the state of
the stomach: it even appeared, sometimes, that the inflammation

of the former was of a more serious character.   The traces of
inflammation were less prominent in proportion as they ap-
proached the termination of the digestive canal, and they were
seldom observed in the large intestines.   Liquid blood of a nau-
seous odour, having the taste of ordinary blood, was found in the
stomachs of one-eighth of the subjects, and sometimes complete-
ly filled this organ.   When the inflammation of the internal
membrane was more intense and more extended, the stomach
contained a kind of grayish pulp of little consistency, resembling
flax-seed meal mixed with water, and having no resemblance to
blood, or to the black matter, and never found in the intestines.
In seven-tenths of the subjects, a brownish fluid was found, which
floated a substance more or less abundant, resembling the grounds
of coffee, or soot mixed with water.   This substance, which was
heavier than the fluid containing it, was generally precipitated;
the fluid was sometimes of a very deep colour, occasionally as
black as ink.   The brownish matter frequently extended as far
as the rectum: in proportion to its distance from the stomach, it
became black and thick.   In the superior portion of the small
intestine it generally exhaled an odour, which was not very
powerful, was rather nauseous, but by no means very offensive.
The liver appeared somewhat larger than usual: it always pre-
sented the yellow colour of rhubarb.   The peritoneum rarely
presented traces of inflammation, which were still less frequent-
ly observed in the biliary and urinary bladders. *

The same alterations were observed in the course of the same
epidemic by M. Adouard: this coincidence in the reports of phy-
sicians, whose observations were made separately, constitutes a
presumption in favour of their correctness. †

M. Thomas, secretary of the Medical Society of New Orleans,
reports that he examined ten bodies during the epidemic yellow
fever which prevailed in 1822 at New Orleans, and that he dis-
covered in most of them a considerable effusion of black blood
in the spinal canal and the adjoining muscles, a rosy colour of
the membranes of the spinal marrow, and unequivocal traces of
inflammation of the stomach. ‡

* Historique Médicale de la Fievre jaune observée en Espagne et parti-
culièrement en Catalogne en 1821. Paris, 1823, in 8vo. p. 339, 359.

† Relation Historique et Médicale de la Fievre jaune qui a regné a Bar-
celone en 1821. Paris, 1822, in 8vo.

‡ Essai sur la Fievre jaune d'Amerique. Paris, 1823, in 8vo. p. 130.

In reviewing the organic alterations found after yellow fever, we observe that there are in almost every case, traces, often deep and extended, of inflammation of the stomach. The large intestines participate less in the inflammatory state than in other fevers. The liver, free from any remarkable lesion, was not entirely sound, except in a limited number of cases. If we may credit M. Rochoux, the gall-bladder was always found inflamed at Martinique. The kidneys and bladder are not less inflamed than in other acute diseases in which there is suppression and retention of urine. The lungs, in general, possess few traces of inflammation; finally, in a few cases traces of spinal or cerebral arachnitis are discovered.

These results demonstrate that inflammation of the stomach is the principal affection in yellow fever, and favour the presumption that the membranes of the spinal marrow frequently participate in the inflammation. As long as the careful examination of the spinal marrow shall be neglected in our climates, in all the subjects who die of acute gastro-enteritis, as long as we shall be wanting in positive information with regard to the signs of spinal arachnitis, so long will it be irrational to affirm that inflammation of the meninges of the spinal marrow is the distinctive character of yellow fever.

But a small number of post mortem examinations have been made in epidemic yellow fever: authors have generally confined themselves to an exposition of general results, or to a very limited number of observations. This important subject is far from being exhausted: until we are in possession of the results of as great a number of post mortem examinations in the present fever as we possess in other fevers, there will be reason to fear that the exceptions will be erected into a rule, as was frequently the case when pathological anatomy was in its infancy. I must take the science at the point at which I find it, and, admitting the correctness of the writers who have seen the yellow fever, I shall attempt to investigate the seat and nature of this disease.

M. Tommasini appears to me to have been the first who published sound ideas of the nature and seat of yellow fever; he first attempted to prove that it was only the highest degree of bilious fever. Adopting the opinion of Pringle, Lind, Mosely, Pinel, and M. Rubini, he remarks that these fevers have the same symptoms, differing only in degree; that the same organic lesions are

found in them, and that the causes and circumstances which pro-
duce them, or favour their development are the same.   " I do
not know," he adds, " what should prevent our classing yellow
fever among the phlegmasiæ, since we rank with them perip-
neumony, which is a general pyrexia, conjoined with inflam-
mation of the lungs, as the yellow fever is a general pyrexia con-
joined with inflammation of the liver, and the internal surface
of the stomach and intestines.*

M. Bally has not adopted the opinion of Pinel, and he appears
not to have duly appreciated that of M. Tommasini: in speaking
of the yellow fever, he remarks, "This typhus might, perhaps,
have found a more suitable place in the sixth order, together
with the plague: this order might then have been divided into
two genera, or even more, if it were thought proper to assign a
place in it to the Sudor Anglicus and the typhus of hospitals."
This arrangement would be a near approach to that of Sauvages,
who makes yellow fever the seventh of the nine species of his
genus typhus.   M. Bally did not devote his attention to an in-
vestigation of the seat of the yellow fever of 1814, although he
approved of the opinion of M. Bancroft, who stated that the
greater portion of fatal cases arose from irreparable injuries sus-
tained by the brain and stomach.

During his residence in St. Domingo, M. Francois was per-
suaded that the seat of yellow fever was in the medulla oblon-
gata or in the cerebellum, which he had always found either
smaller or more friable than in the ordinary state.   He should
have stated definitely which of these two parts had been found
diminished in size, for it could not be indifferently one or the
other of them.   M. Bally remarked that in one of the bodies
which he opened, the medulla oblongata, where it penetrates
into the spinal canal, was sensibly smaller than in the normal
state, and appeared, as it were, atrophied; there was a considera-
ble space between the dura mater and the arachnoid membrane,
so that the finger could pass freely between them: there was ob-
served some serosity slightly tinged with blood.   M. Bally far-
ther remarked, that in the body of an officer, concerning whose
disease no information could be obtained, but whose skin was

* Recherches Pathologiques sur la Fievre de la Livourne de 1804; sur la
Fievre jaune de Amerique et sur les Maladies qui leur sont analogues; tra-
duites de l'Italien. Paris, 1812.

deeply tinged with yellow, the medulla oblongata appeared shrunk, and did not fill the occipital foramen.

MM. Bally and Francois no longer regard the medulla oblongata as the seat of yellow fever, but rather the cauda equina; and M. Pariset accords with them in opinion. By what strange fatality is it, that the attention of these physicians has been fixed alternately on the extremities of the spinal marrow, instead of being directed to the stomach, which presented evident traces of inflammation in the nineteen bodies which were opened at Barcelona? Because the arachnoid membrane of the spinal marrow was not found red and opaque, they declined considering it as inflamed; while, at the same time, they pretended that the gastritis, the traces of which they have described with so much care, was consecutive to the affection of the cauda equina.

An examination of the symptoms of yellow fever, and of its pathological anatomy, although the researches in the latter have been limited, has induced M. Dubreuil to regard the disease as a *gastro-enteritis, ataxic, or adynamic, arising from a deleterious cause, or a virus sui generis,* * not as a well developed phlegmasia, but rather as a *malignant* inflammation. The liver appeared to him to suffer lesion as a *secretory* organ, not as a *glandular* organ. I have already expressed my opinion on the impossibility of admitting inflammations, which vary in any other manner than as it respects their seat, their intensity, and their sequelæ. M. Dubreuil always regards gastro-enteritis as the primitive lesion in yellow fever.

M. Broussais thinks that this fever is but a gastro-enteritis, aggravated by atmospherical heat, which occasions it to pursue its progress with an activity unknown in our more temperate climates.† This appears to be the only admissible opinion in the present state of the science: we should only add, that the encephalon is generally less seriously affected in this disease than in most ataxic fevers, since the intellectual functions preserve their integrity until a short time before death.

The jaundice depends, according to M. Broussais, upon inflammation of the small intestines, and especially of the duodenum, which augments the secretion of bile, and at the same time

* Memoire sur la Fievre jaune, inseré dans le Journ. Univ. des Sc. Med. viii. p. 317.

† Annales de la Medicine Physiologique, i. p. 460.

opposes the disgorgement of the liver, by determining the con-
striction of the ductus choledochus.   Without resorting to this
mechanical explanation, which has not even the merit of novel-
ty, it should, I think, be admitted that the sympathetic irritation
of the liver is sufficient to suspend the formation of bile, and
that what is already formed is at the same time abundantly
poured into the duodenum, until the gall-bladder is empty, or
nearly so.   The latter is seldom found filled after the yellow fe-
ver.   Should the remarks of M. Rochoux, with regard to the
inflammation of the biliary bladder and ducts, be confirmed by
new researches, the traces of inflammation of the liver, which
have not hitherto been discovered, at least in the majority of
cases, must henceforth be sought, not on the surface of the
liver, but in the biliary duct.

Is it not the fact, that under the name of yellow fever, many
diseases of different seats have been designated, having this com-
mon character, that they are inflammatory and give rise to icte-
rus?   This was the opinion of Urbain Coste, who, while in An-
dalusia, had observed acute gastro-enteritis with jaundice, when
there was no reason to suspect that the yellow fever had been
imported into this province of Spain.

Shall we attempt to determine whether the yellow fever is a
new disease, or whether a description of it, at least a summary
one, is not contained in the writings of Hippocrates?   Shall we
discuss the question, whether it originated in Martinique, or
whether from the empire of Siam it was transported into this
island; and, finally, from the climates of America into Spain?
The multitude of publications which have appeared upon these
questions, proves that they are not susceptible of a solution com-
pletely satisfactory.

In a small work published in Philadelphia* in 1794, Deveze
advanced, contrary to the opinion of all the Anglo-American
physicians, that the yellow fever was not contagious, and that it
had not been imported by vessels coming from St. Domingo.
The greater part of the physicians of the United States, and of
the Caribbee islands, ultimately adopted this opinion.

M. Bally advocates the opinion that it is imported, and is con-
tagious, at least in many cases; and he was confirmed in this

* Recherches et Observation sur les Causes et les Effets de la Maladie
Epidemique qui a regné a Philadelphia, en 1793. Philadelphia, 1794.

opinion during his residence at Barcelona. Many physicians of that town believe, on the contrary, that it is not contagious, although some among them do not deny its importation.

According to Urbain Coste, the most current opinion at the present day, among the physicians of Andalusia, who have seen the disease, and who have intelligence and independence enough to form an opinion for themselves, is that the importation of the disease is a demonstrated fact, but without any reference to contagion. The constant coincidence of the appearance of this fever with the arrival of vessels from the colonies, and the well known fact, that the disease first appears among those who have visited the ships, have assisted in the discharge of the cargo, and the opening of the bales, have given rise to the opinion that the air of the yellow fever is imported by the vessel. Contagion does not, with these physicians, imply the idea of a specific virus, but only that of a poisoning by a gas. Its *propagation* only signifies the reproduction of this same poisoning in the persons of healthy individuals, by means of the importation of the air corrupted by the sick, within a sphere, the limits of which it is impossible to determine.

This exposition of the opinion of the physicians of Andalusia, with regard to a disease which they have so often observed, I regard as the more valuable, as it was transmitted to me by a man distinguished for veracity, in whose premature death science has sustained a heavy loss. *

All the arguments advanced on both sides of the question of the contagion, and importation of yellow fever, have been collected with care, in a work whose authors unfortunately speak like myself, without personal observation.† It does not belong to me to untie, much less to cut this Gordian knot. However, the remarks which have been made on the subject of the propagation of typhus, and the sanitary measures which it demands, appear to me applicable to the yellow fever, and I shall only add a few reflections.‡

* Voy. ses Observations Médicales sur la Campagne d'Espagne, en 1823. Paris, 1825, in 8vo.

† Recherches sur la Contagion de la Fievre jaune, par J. D. Bouneau et E. Sulpicy. Paris, 1823, in 8vo.

‡ With regard to the measures to be taken to prevent its importation, a small work by M. Keraudren may be consulted, entitled, Projet de Règle-

The first question which presents itself, and perhaps the only decisive one, is—Does the yellow fever propagate itself from an individual affected by it, to another in health? or, in other and more precise terms, does an individual approaching another affected with the yellow fever, become diseased in the same manner? The only answer to this question which appears conformable to facts, is an affirmative one; for, 1st, if an individual enter the chamber of a person affected with the yellow fever, he is frequently seized with the disease in a short time, although he may not have touched the patient: 2dly, the disease commences in some point of a town, and only spreads gradually to other districts, at last, however, invading those places which are most advantageously situated. I know not whether these facts are false, or whether they have been badly observed; but until their inaccuracy has been demonstrated, we are not permitted to reject the consequence naturally flowing from them. We are, moreover, indebted to M. Keraudren for the publication of important facts, collected on board public ships, which tend to establish the contagious nature of the yellow fever.

Does the yellow fever propagate itself beyond the limits of the town in which it prevails. This point is of a more uncertain character: it even appears that it may be answered in the negative; for the disease did not extend into the villages in the neighbourhood of Barcelona, comprised within the limits of the cordon, although patients went thither to die.* It results from this last circumstance, which is universally acknowledged, and which accords with a multitude of other facts, that the yellow fever is less capable than the typhus of spreading to a distance. But experience has not yet decided, whether an army, suffering from the ravages of this fever, can transport it to a neighbouring nation, the season and locality being favourable: this supposition, if we reflect on the propagation of typhus, does not appear absurd, and the occurrence of so dreadful a calamity, should therefore be guarded against. Whatever be the opinion entertained with regard to the manner in which the disease communicates itself, it is important to investigate the circumstances which favour its development and propagation.

ment ayant pour objet de prevenir l'Introduction par mer des Maladies contagieuses. Paris, in 8vo.

* Rapport de la Commission Medicale envoyée a Barcelona, Paris, 1822.

A physician, who has done honour to the name of France in the United States, proposes to determine by experiment, whether this disease can be communicated. *   The indefatigable zeal and honourable perseverance of Deveze, are deserving of praise; but, it may be asked,—do his experiments, although made where the yellow fever was not prevailing, conduct to decisive results? If the disease was not developed in the individuals who were exposed to it, is it rational to conclude, that it never communicates itself? If the disease did communicate itself, should we then have a certain means of recognising the organ which had received and introduced into the system the agent of transmission?

A consolatory fact, for the northern countries of Europe is, that this fever has not appeared farther north than the 45° of latitude.†   It has been observed a great number of times since the year 1684, in Brasil, Peru, Guiana, Darien, New Grenada, the Antilles, St. Domingo, Mexico, Havana, Louisiana, Florida, the United States, the Canaries, Africa, Spain, once in Leghorn in 1804, and never in France except in the Lazarets.

In many parts of America, it prevails more or less during the whole year, but especially during the months, when the heat is most intense, and most permanent. Beyond the limits of the tropics, it ceases immediately on the approach of the cold season,

* Memoire au Roi en son Conseil des Ministres et aux Chambers. Paris, 1821.

† The malignant fever of Rochefort, described by Chirac, and which was mentioned in the preceding chapter, was not the yellow fever; Chirac, far from considering it contagious, as he is said to have done in an historical monograph of the yellow fever, strongly censured those who believed it such. The epidemic which desolated Brest in 1747, was not the yellow fever. It is painful to think, that measures of so great importance should be taken in consequence of assertions so lightly made: but the utility of these measures seems justified by the following fact. When Admiral Villaret returned to Brest, with the ships which had transported to St. Domingo the army of General Leclerc, a custom-house officer who had been placed on board a ship, in which the mortality had been great, contracted a disease, which proved fatal in less than forty hours. Duret, a distinguished surgeon of the navy, visited the patient and recognised the yellow fever. Two other persons, not belonging to the armament, but who had communicated with it, were also attacked; one died on the fifth day, and the other recovered. Sanitary measures were adopted, and the disease did not extend. (Keraudren, Projet de Reglement, etc.)

It never appears when the thermometer is below the fifteenth or sixteenth degree of Reaumur. In America, it seldom attacks the creoles, the negroes, and the mulattoes; its victims are generally Europeans, who have recently arrived. The same individual is seldom affected twice with this fever; but a native, after a long absence, is liable to contract it upon his return. The same is the case with Europeans, who, after having suffered from this disease, leave the Caribbee islands, and return after an indefinite period. In Europe its ravages have not been confined to any particular class of inhabitants.

The places most liable to the ravages of the yellow fever, are populous cities, situated upon the sea-coast, which is more or less damp. It rarely extends more than ten leagues from the sea; when it spreads to a greater distance, it is along a considerable river. It does not appear that it has ever crossed a chain of mountains, although it is said to have prevailed in some elevated parts of Spain. In America it has never been observed in elevated situations: it is generally in low grounds that it prevails. Hence, it may be concluded, that humidity favours its development. It cannot be doubted, that marsh miasmata contribute to its origin; but these cannot be the sole cause, since there are not marshes in all the places in which it is observed.

The yellow fever is said to have sometimes appeared aboard a vessel without its having had any communication with the land. This does not appear to have occurred except within the tropics; but the disease has continued after the vessel has arrived in a more temperate climate.

Westerly and southern winds appear to favour it either at sea or on land.

If the long continuance of a low temperature arrests the ravages of the yellow fever, a momentary current of fresh air is the condition most favourable to its development: thus, it is observed to attack a greater number of persons after a rain which has cooled the atmosphere. By a totally opposite action, insolation determines it very frequently, and in such cases, there is reason to believe that irritation of the meninges may precede the gastritis, which, however, declares itself in a short time.

Like all other fevers, it manifests itself under the influence of depressing moral affections, nostalgia, fatigue, excess in study, in venery, in food and drink. Conjoined with heat and the sup-

pression of cuticular action, these excesses are certainly the most powerful causes of the yellow fever: some of these causes act by exalting the sensibility, that is, the cerebral action, and others by exciting the organs of digestion. Under these circumstances, cold applied to the skin, a moral affection, or fatigue, however slight, may develop the yellow fever.

Its victims are particularly adults, the male sex, individuals of ample chest and vigorous heart, and of excitable nervous system. Women are less subject to it than infants, and it still more rarely attacks old men.

None of the causes which have been pointed out, are sufficient to produce yellow fever, even of sporadic character. Their concurrence is essential to its epidemic prevalence, and is the cause of its existence in many countries without its having been imported. It is unnecessary to remark, that the most decided partisans of its importation declare, that it cannot occur, unless there exist causes favourable to the introduction of the miasm. This consideration is of great importance to a determination of the sanitary measures which should be enacted, with a view to the preservation of towns, situated at a great distance from each other. We may add, that, acccording to M. Bally, the emanations of the yellow fever are not so heavy, or so susceptible of importation as those of the plague, and that they seldom resist atmospheric changes.

The yellow fever prevailed in 1823, in Port du Passage, in Spain, near St. Sebastian, and, according to M. E. L. Jourdain, one of the causes of this fever was the pernicious air which had been long confined in the brig Donosteria. This, together with other causes, such as elevated temperature, humidity, the crowding together of people, the situation of the place, developed the yellow fever, a disease which, by its nature, is a true gastro-enteritis, presenting a peculiar physiognomy. It was not contagious in this town, and persons who were attacked by the disease, and who were carried to the environs of the town, and died, did not communicate it. Eighty-five individuals were attacked: of these, twenty were cured before the establishment of the *cordon:* of the sixty-five who remained at Port du Passage, twenty-seven were men, and thirty-eight women. Twenty-four died, of whom thirteen were men, and eleven women, to these must be added a custom-house officer, five carpenters, a huck-

ster, and a physician, who, after having attended the sick, re-
tired in good health to the neighbourhood of the town, where he
was taken sick, and died; and finally, two persons, man and
wife, who died at Loyola, whither they had gone in health,
but after having visited the ship.

Ten or twelve days after the departure of the brig from Ha-
vana, one of the crew who had eaten fruit, and drunk brandy in
large quantities, died: a short time after his death, much foam
was discharged from his mouth: there had been no other sick
persons on board.

Two bodies were opened at Port du Passage. One was a mer-
chant, forty-two years of age, and of sanguine temperament.
After forty-four hours of sickness he was affected with horrid
convulsions, and icterus, had dejections of black blood, and
was delirious.   Blood-letting had been practised with the inter-
nal exhibition of demulcents, and the application of sinapisms.
A considerable effusion of bloody serosity was found between
the lobes of the brain, the vessels of which were greatly in-
jected; the mucous membrane of the œsophagus and small intes-
tines was inflamed: clots of blood were found in the right auri-
cle of the heart: there was black matter in the stomach, the liver
was large, and the gall-bladder empty.

The other body, which was examined, was that of a woman,
aged twenty-three, of sanguine temperament, who died of a sick-
ness of three days.   There had been very decided icterus,
black vomit, very copious black dejections, nasal hemorrhage,
delirium and hiccough.   Eight leeches only had been applied; de-
mulcents and sinapisms had been prescribed.   A considerable
effusion of bloody serosity was found between the membranes,
and in the ventricles of the brain, as well as in the peritoneum;
the right auricle was filled with coagulated blood; the stomach
and great intestines were filled with an acrid matter; the mu-
cous membrane of the small intestine was inflamed, and the gall-
bladder empty.   The body was opened on the eleventh of the
month, by MM. Ouin and Poteau: the first felt himself in-
disposed immediately after the examination, and endeavoured,
but in vain, to brave the disease; on the fourteenth, he was con-
fined to bed, and on the thirtieth was cured.

This epidemic having attacked only a limited number of per-
sons, there was an opportunity for acquiring information of a

more certain character with regard to it, and it is thus proved, that a ship coming from the Havana, may be the cause of the development of the yellow fever in a town, even when the disease had not existed on board the vessel; at the same time, it must be admitted, that the development of the epidemic was favoured by a diversity of circumstances. This fact gives much room for reflection, and establishes the necessity of taking precautions against vessels arriving from America. It is to be observed, that the brig had made a quarantine of ten days, at Corogne, and that it arrived at Port du Passage six days after; the cargo was discharged on the sixth, on the fifteenth the customhouse officer who had passed several nights on board was taken sick, and died on the seventeenth, with symptoms of yellow fever: on the fifteenth, likewise, two carpenters employed in repairing the vessels were taken sick, and died on the twenty-ninth. On the twenty-sixth, three men, also carpenters, were seized, and died, one on the thirtieth, two others on the thirty-first. The disease extended to the houses nearest to the vessel, although they were situated in the finest part of the town. The most unhealthy part escaped. The epidemic commenced as soon as the brig was opened; it advanced with the hot season, and ceased immediately on the appearance of rain.*

Since the commencement of the nineteenth century, Gibraltar has been the theatre of several epidemics. The last of them was in 1828, and has attracted in a special manner the attention of the French physicians, in consequence of a recent and memorable discussion to which it gave rise, as well as of the medical commissioner appointed to investigate the disease, according to the suggestion of M. Chervin. I proceed to give a summary of the information which we possess, with regard to this epidemic.

The disease made its appearance on the tenth or twelfth of August, in an elevated part of the town, to which it was confined for the space of three weeks, although no precautionary measures were taken against its extension. At the termination of this period, it appeared in other quarters, and before the end of September, the whole town, as well as the rest of the western aspect of the rock, was invaded by the epidemic.

During the space of a month, the government considered the

* Notice Topographique du Port du Passage dans les An. de la Med. Phys. iv. p. 505.

prevailing disease only as an autumnal bilious remittent fever,
existing under an aggravated form, and this opinion is still enter-
tained by all the English physicians who witnessed the epi-
demic.

The contagionists and infectionists agree in this one point, that
the disease in question is identical with the yellow fever of Ame-
rica, as well as with that which has appeared at diverse periods
in the south of Spain.   M. Chervin, in particular, who has wit-
nessed the epidemic yellow fever several times in the new world,
is a firm believer in this identity.

The symptoms presented by the epidemic of Gibraltar, resem-
bled those of epidemic yellow fever in general: as they have
been already described, it is unnecessary to repeat them here.

Death generally occurred from the 7th to the 10th day, but in
some cases not until the second week, and sometimes at a much
later period. Relapses were frequent and often fatal. Some cases
of second attacks were likewise observed. The disease was more
fatal among men than among women, and it presented a charac-
ter of much greater severity among the military and the En-
glish in general, than among the mass of the population, com-
posed of Spaniards and Italians: among the latter, children were
very slightly attacked.   The total number of sick, during the
epidemic was about 3,500, and the number of deaths 1,660.
Had there been no removals from the place, the number of
deaths would doubtless have been doubled. We do not perceive,
that the dissections, made during the last epidemic at Gibraltar,
present any thing new. The pathological lesions observed, were
principally in the gastro-hepatic apparatus.   The mucous mem-
brane of the stomach was red, either over its whole extent or
only in some of its parts.   It was generally more or less easily
detached from the muscular membrane, and on attempting to
raise it in shreds, it tore readily; in certain cases it was impos-
sible to detach it in strips more than two or three lines in length,
with whatever care the attempt was made.   Analogous altera-
tions were remarked on the mucous membrane of the intestines,
especially in the small intestines.*

The liver presented different colours, generally a pale olive

* Voy. Son Expose des Lesions Pathologiques Observées sur les Cadavres
des individus morts de la Fievre jaune pendant l'Epidémée de Gibraltar,
in 1828.

green, making a considerable approach to that of the powder of
Columbo. The numerous common sewers, which exist under
the streets of Gibraltar, were one of the principal causes to which
was attributed the production of the last epidemic which pre-
vailed in that town. These sewers receive not only the rain,
the refuse water of the houses, the remains of large quantities of
vegetable and animal substances, but likewise the contents of all
the privies. This state of things can give rise to no inconve-
nience during the rainy season, because the putrefying matters
are carried off immediately, or in a very short time; but this is
not the case during the dry season, the duration of which at Gib-
raltar, is generally five or six months. June, July, August, and
September, frequently pass without any rain. The sewers during
this time, become the receptacles of a great quantity of vegeta-
ble and animal substances, which, operated upon by moisture
and a high temperature, soon enter into decomposition, and give
rise to exhalations which necessarily contribute to vitiate the at-
mosphere.

This vitiation would, in all probability, not occur, if there
was sufficient ventilation at Gibraltar: but this is not the case;
the eastern wind is intercepted by a mountain, which rises to
the height of two hundred feet above the most elevated part of
the town, and above the level of the sea, more than four hundred
feet. On the other hand, when the western wind prevails, it
strikes directly upon the rock, penetrates into the principal
sewers which open upon the shore, and thus drives back their
effluvia upon the upper part of the town. This wind prevailed
in an extraordinary manner during the last summer, and in con-
sequence, the epidemic was observed to commence in an elevated
situation, which corresponded to one of the principal sewers,
and which likewise suffered from insufficient ventilation. Was
this a mere coincidence? The more probable opinion is, that it
was not.

A diversity of additional causes are pointed out, as having con-
tributed to the production of the last epidemic at Gibraltar, such
as the density of the population, its poverty, the smallness and
filthiness of the houses in general, and in many cases, the almost
total want of ventilation. We may add, that these disadvan-
tages are not altogether confined to the houses of the poor, and
that the whole town sometimes suffers from a stagnant atmos-
phere.

A great number of persons visited and attended the sick, and were in immediate contact with them, without, however, contracting the disease; whilst many who neither had any communication with the sick, nor touched the objects considered as contagious, were attacked.   What appeared most pernicious was exposure to the night air in infected places; thus, the soldiers were generally attacked after having been on guard in such places, although they did not approach the sick.

If the cause of medical science has not been promoted by the last epidemic, in relation to practice, much light has, notwithstanding, been thrown upon the origin and character of yellow fever, and the question of the non-importation and non-contagion of the disease, seems to have been solved in a definitive manner, by the facts observed at Gibraltar in 1828.

When M. Chervin applied to the government to be sent to the theatre of the epidemic, he desired that a contagionist might be associated with him, in the commission.   In place of one, two were appointed: viz. MM. Louis and Trousseau.   During the whole course of their investigations, the colleagues of M. Chervin displayed an ardent zeal for contagion.   They made every effort to collect facts corroborative of their opinion, which was also that of the administrator who had sent them: notwithstanding which, they have not pronounced with regard to the origin and character of the epidemic which they were sent to observe; whilst M. Chervin, and almost all the English physicians and surgeons who witnessed the epidemic, are convinced that the disease had a local origin, and that it was not contagious.   This fact cannot but be very important in the decision of this question, and it acquires additional force, when it is known that of the three English physicians who declared in favour of the doctrine of importation and contagion, one is Dr. Pym, superintendant-general of quarantines in England, another, Dr. Broadfoot, physician of quarantine at Gibraltar, and the third, Dr. Barry, who was one of the strongest partisans of local origin and non-contagion, before the arrival of the superintendant-general at Gibraltar, about the end of November, 1828.

The proofs of the non-contagion of yellow fever, were extremely numerous in the last epidemic at Gibraltar; I shall not here enumerate them; but merely state the impression left by them on my own mind. We remarked, that this disease did not

propagate itself on the European side, and neither Moulin-a-Vent nor Champ Neutre, nor the ships moored in the bay, were infected, although the disease had been frequently carried to these several places, by persons who had contracted it in the infected district. Those who are desirous of the most detailed account of the last epidemic of Gibraltar, may consult the writings of M. Chervin, as well as those of MM. Gillorist, Wilson, and Frazer, English physicians who were present during the epidemic, and who engaged in the investigation with much zeal.

Treatment of the Yellow Fever.

A residence in the most elevated part of the country in which the disease prevails, and at as great a distance as possible from the sea-shore; sobriety, moderation in the use of the fruits of the climate, temperance in venereal indulgence, and in study, firmness of character, enabling the individual to banish all fear, unremitting care in avoiding every thing which may suppress the perspiratory action of the skin; such are the conditions in which the individual should be placed, and the precautions which he should take to preserve himself against the yellow fever.

It cannot be too deeply impressed upon the mind, that the therapeutic measures have been founded less upon experience than upon theoretical ideas. Nothing proves this more forcibly than the diversity of curative means recommended by physicians who have written upon the subject. Some behold in this disease only a bilious fever, and prescribe vomiting and purging: some consider it an inflammatory fever, and recommend blood-letting: the greatest number attribute the disease to astheny, and, notwithstanding the numerous symptoms which manifestly announce intense inflammation, are prodigal in the use of bark; others, still less wise, seek for specifics, which some think they have discovered. M. Bally has submitted these means to examination; which, though severe, should have been still more so.

He has observed some patients become convalescent after a copious and long continued discharge of urine, after alvine dejections, varying in colour, from yellow to black, and after abundant and uniform sweats. Hence, he concludes, that in certain

cases, we may, with advantage, solicit the discharge of urine by
prescribing lemonade, orangeade slightly bitter, a solution of
cremor tartar, of the acetate or nitrate of potash; diaphoresis,
by the employment of friction, of baths, at first warm, after-
wards warm and cold, alternately, and by administering warm
drinks.   But he does not indicate the cases; and, unless I mis-
apprehend, he only recommends the favouring of these evacua-
tions when they already exist.   This is, doubtless, proper when
the symptoms become meliorated on the occurrence of these
evacuations: but, should we endeavour to promote them when
the most alarming symptoms accompany them?   Is it proper,
for example, with the view to favour a crisis by stool, to pre-
scribe tamarinds, castor oil, and laxative lavements, at the risk
of provoking black or bloody dejections, which almost always
indicate the approach of death?

At the present day, it is not only in the quantity of the eva-
cuations and their colour, but also in the state of the internal
and external organs that we must seek the indications to be ful-
filled.

The same author declares that emetics have seldom succeeded
in America.   An unhappy experience in a short time convinced
him that they increase gastric irritation, and the disposition to
vomiting.   Vomiting of blood, complete prostration, sudden
death, and dangerous dysentery, were the effects of emetics, ac-
cording to his observations.   Even ipecacuanha, given with the
greatest caution, was so dangerous that it was preferable to aban-
don its use.

In America, M. Bally prescribed, during the first two days,
anodyne, mucilaginous, and laxative enemata; when the meteo-
rism and tension of the epigastrium were considerable, he add-
ed camphor and quinine, in large doses, to combat prostration,
and sometimes a considerable quantity of vinegar, to prevent de-
composition.   To prevent hypercatharsis, he prescribed lauda-
num, or the theriaca.   Since his theory compelled him to resort
to this disturbing treatment, he at least deserves credit for not
administering them by the mouth.

The warm bath, in which he kept the patient for several hours,
and at different times, appeared to him a powerful auxiliary to
the treatment, when there was no danger of pulmonary conges-
tion.   It would be more rational to fear a congestion of the head,

a congestion which might be prevented by the application of ice to the cranium.

If the warm bath is useful, it is not certain that the same remark may be made with regard to baths of bark and alcohol, which M. Bally did not employ, but which he recommended to the attention of practitioners. He did not employ the cold bath, which, it is said, is used by the negroes so successfully as to authorize a trial of it. I should not readily resort to such a measure in a disease which menaces both the head and chest. The case is not the same with regard to cold applications to the head; they are indicated whenever there is an afflux of blood to the head, and should be assisted by the abstraction of blood and hot pediluvia. M. Bally recommends pediluvia, rendered stimulating by mustard or vinegar.

Hot fomentations applied to the epigastrium, epithems, with camphor, opium, and theriaca, frictions, with sulphuric or acetic ether, appeared to him to moderate the vomiting. Blisters, which he applied to the same part, are directly contra-indicated by the nature of the disease. Cups occasion intolerable and dangerous pain, if the epigastrium is sensible to pressure. The water of orange leaves, of mint, ether and mint, should have been banished from the practice of a physician, who, in the multitude of post mortem examinations which he made, almost always discovered a more or less marked state of phlogosis of the stomach. It, doubtless, was previously to his researches that he prescribed liquid ammonia; after his investigations, he surely would have been on his guard against such a measure. Yet, when the alvine evacuations became excessive, he gave opiate mixtures, the root of columbo, cascarilla, catechu, and sulphuric acid, in union with the serpentaria. When meteorism of the abdomen was not a precursor of a critical movement, when it was owing to extreme debility, or a gangrenous disposition, (M. Bally does not say by what signs he recognised this debility, this disposition,) he had recourse, not only to the exciting lavements already mentioned, but likewise to the internal use of the extract or tincture of bark, and also of ether and camphor. When there was hemorrhage he resorted to cold acidulated lotions, to the mineral lemonade, to the decoction of bark and serpentaria, acidulated, to the acetate of ammonia, to the sulphuric elixir of Minsicht, to the super-sulphate of alumine.

M. Bally is certainly one of the physicians who have sacri-
ficed least to a blind empiricism, and to the doctrines of Brown,
in the treatment of yellow fever, and it is on this account that I
have described his method rather than any other; because he
persisted for a longer time in the employment of acidulous
and emollient remedies.   We now perceive that the yellow fe-
ver has been treated in America in the same manner as the ty-
phus has been in Europe; consequently, the yellow fever being
in general more fatal than the typhus, and the treatment being
equally contra-indicated by the state of the organs in both coun-
tries, it is not surprising that the mortality from the one has
been even more considerable in America than that of the other
in Europe.   It is proved by the researches of M. de Jonnès,
that, between the years 1796 and 1802, more than a quarter of
the French troops sent to the Caribbee islands were cut off by
the yellow fever.   Whatever be the violence of this disease,
such a result evidently demonstrates that the treatment hitherto
employed should be abandoned: certainly it would be difficult
to point out the impropriety of substituting another mode of
treatment, or even of abandoning the disease to nature, in pre-
ference to continuing a practice so inefficient or injurious.   " In
the month of December, 1802," says M. Bally, " I was attacked
by the prevailing disease, in consequence of sleeping on board
a man-of-war, which was in the road-stead: here I was pene-
trated by a humid cold, from which I found it impossible to pro-
tect myself.   The next day I felt no indisposition; but, on the
following morning, at two o'clock, I was seized with a rigor,
which lasted half an hour, and which was followed by conside-
rable heat and profuse sweat; my body was immediately assailed
throughout with pains, and the kidneys, in particular, were vio-
lently affected.   They persisted during five days, and that of the
kidneys continued until the ninth; the fever was marked by a
strong exacerbation towards evening, by intense heat, more re-
markable in the hands and feet, and by an increase of the in-
tense pain which pervaded the whole body.   Sometimes I was
sensible of some confusion of intellect, but I was not delirious.
I preserved a state of uninterrupted calmness and tranquillity.
My sleep was interrupted, and was seldom tranquil; my tongue
was loaded, white in the centre, and clean on the edges; thirst
moderate, salivation abundant, mouth clammy.   The organs of

taste and smell had acquired such acuteness, that I could distinguish in water the aromatic savour and odour communicated to it by the flowers which fell into the stream, a delicacy of perception to which I was a stranger during health. Whenever my feet were immersed in the water, I was seized with a general spasm, more sensibly and painfully felt in the stomach: the spasm was followed by pain and syncope; but after this first effect had passed, the pediluvium appeared to have a soothing effect, and I remained in it with pleasure. It was readily perceived that the stomach was the seat of an affection, from its liability to painful contraction, from the frequent eructations, vomiting, and want of appetite. A gentle purgative was administered, which was immediately rejected, and which fortunately produced no effect. Lavements occasioned dejections of whitish matters, the urine was free, and respiration easy. I could not support any kind of drink; every thing appeared to me either insipid and nauseous, or too strong: it was, therefore, necessary to confine myself to simple water. I remained in this state for ten days, and my convalescence was neither long nor painful. I took no kind of medicine. The effects of simple water, were assisted by a general bath, by pediluvia, and by lavements."

Were I suffering under the yellow fever, I should certainly desire to be treated as M. Bally was; and I cannot but remark on the present occasion, the similarity of his conduct to that of Hildenbrand. Differing from Chirac, who employed the same method in his own case, which he prescribed for his patients, these two physicians wisely preferred the danger of their disease to that of the treatment.

There is one measure with regard to which experience has not yet pronounced; I mean the abstraction of blood. Almost all the physicians who have seen the yellow fever, regret bloodletting in this disease. Some, Deveze and M. Dalmus among others, recommend it at the commencement, and when the symptoms have a very marked inflammatory character. A few, and among these Mosely, advise the repetition of blood-letting until the symptoms decrease in intensity. The first trials of this measure, which M. Bally made, succeeded so badly that he hastened to follow an opposite plan: " I observed," he remarks, " that the patients who were bled by the routine of practitioners of the

country, died two days sooner than was usual in other cases: viz., about the fifth, instead of the seventh day." Independently of these results, we are not inclined to class venesection among the remedial measures in this disease, since it is seldom useful in gastro-enteritis.   The only cases in which it can be resorted to with advantage, is when the lung is on the point of being in-flamed, or delirium about to supervene.

M. Rochoux advises five or six bleedings in the space of forty or sixty hours from the commencement of the attack; he thinks that if the second day be allowed to elapse without employing this measure, it should not be resorted to.   Leeches appeared to him of very secondary utility, on account of the rapid progress of the disease; yet he advised the application of twelve or fifteen to the epigastrium, when after venesection there remained an acute pain in this part, although the general excitement had been calmed.   This physician appears to me to have totally misun-derstood the treatment of gastro-enteritis.   If an acute pain per-sists, after venesection has been practised five or six times, it is evident that this measure has diminished the acceleration of the circulation, without dissipating the local phlegmasia which had determined the acceleration; whence we may conclude that in such cases venesection does not affect the focus of disease, and that it only debilitates the patient.

M. Rochoux remarks that the bites of the leeches sometimes occasion the flow of an enormous quantity of blood, against which most of the topical applications are found inefficient; in almost all cases it is necessary to resort to cauterization with the nitrate of silver. He thinks this tendency of the capillaries to pour out blood, is more rare among acclimated persons. I may remark that I have frequently observed these hemorrhages in Paris, among adults, and much more frequently among infants, when there was a considerable acceleration of the circulation, and par-ticularly in very intense gastro-enteritis.   I have frequently re-garded the obstinate flow of blood as indicating the necessity of abstracting a great quantity, and I have always had reason to be gratified that I had not arrested the hemorrhage until the ap-proach of syncope.   Whether the same course would be ad-visable in the yellow fever, I am incapable of saying.   Would the bites of twelve or fifteen leeches furnish more blood than ve-nesection five or six times repeated in the course of forty or sixty

hours—with a loss of twelve or sixteen ounces each time. This is improbable, since it would be necessary for this purpose, that each bite should furnish more than five or six ounces of blood in the course of twenty-four hours, the mean duration of a hemorrhage caused by so slight a wound.

It is much to be desired, that methodical researches should be made by physicians, with regard to the effect of a great number of leeches applied to the epigastrium at the commencement of yellow fever, and during the first stage of this disease. To render such researches conclusive, it would be necessary to prescribe at the same 'time a severe diet, acidulated and gummy drinks, or simple water in repeated doses, emollient fomentations, lavements, hot pediluvia and warm baths. The results of these measures should be patiently awaited without resorting to the employment of tonics, even when a fancied degeneration of the disease, or pretended complications appear to necessitate their employment. Until this be done, the yellow fever will rest a deplorable monument of the most blind and dangerous empiricism.

When the preceding remarks were first made by me, I was not aware that experience had converted into certainty the presumptions of theory. The epidemic of Port du Passage, furnished M. Jourdain the opportunity of investigating this subject. Most of the patients, although they were violently attacked, and presented the most alarming symptoms, preserved their muscular power until the last moments of life. The yellow colour of the skin invariably increased after death. General blood-letting was fatal in most cases. Emetics always aggravated the disease, particularly when administered in the commencement. Lavements of salt water or vinegar were injurious. Mucilaginous and emollient drinks, lavements, cataplasms, and fomentations were very advantageous; oleaginous remedies were also useful. Leeches applied at the commencement, to the epigastrium, always arrested its progress; but they were generally applied in too small a number, or after the employment of injudicious and dangerous measures, such as general blood-letting and emetics. External stimulants, sinapisms and blisters were useful at the termination of the second period of the disease, as powerful resolvents. Internal stimulants and bark, were not employed by any of the physicians who treated this disease at

Port du Passage; all were convinced that the disease was more or less inflammatory.

Had M. Jourdain confined himself to these assertions, he would have imitated all other writers on epidemics, but he has done more, he has given the history of all the patients in a single synoptical table: his example is worthy of imitation in all similar cases.

Of sixty-five patients, leeches were prescribed for thirty-nine. In some cases the number was small; in one case their application was neglected: of the thirty-nine, nine died. Eleven were bled, and afterwards leeched: of these, six died; three were bled, and died: two were leeched after an emetic, and died: one took an emetic and was bled, he died: nine used mucilaginous and acidulated drinks, and to some of them blisters were applied, and three died. This medical arithmetic is a decisive answer to the abettors of gastric embarrassment, and *gastricity*. Why is it that the physicians sent to Barcelona have only given us vague statements, instead of this interesting detail?

In a report replete with extended and profound views, M. Dupuytren considers the subject in all its bearings: he does not think that the experiments proposed by MM. Costa and Lasserve are sufficient to solve the question of contagion: he only regards them as one of the means of arriving at this desirable solution, and as the commencement of a series of experiments which should be instituted, with the view of deciding whether the yellow fever be contagious, and if so, under what circumstances. The commission, of which M. Dupuytren was the organ, proposed a convention, to which medical men of every country should be admitted, and to assign a large prize for the investigation which should contribute most to the elucidation of all questions relative to the seat, nature, development, and propagation of the yellow fever. Let us hope for the execution of this noble project, and that France will again appear conspicuous in the promotion of philanthropic enterprises.

CHAPTER IX.

Of the Plague.

THE name of plague is generally given to diseases which infect at one time the greater part of the inhabitants of a country, and which carry off in a few days most of those who are affected: but, according to many physicians, the rapidity with which death occurs, and the immense number of deaths are not the only characteristics of pestilential diseases. It is essential to the character of plague, that in addition to the symptoms common to all dangerous fevers, there should be buboes and carbuncles, if not in all cases, at least, in most. Petechiæ are no longer considered as symptoms peculiar to the plague, although they often accompany diseases which are designated by this name: it may thus be perceived, that this name is more limited in its signification than formerly.

The plagues which have ravaged the earth, having presented remarkable differences, any general description that might be given, would not very accurately delineate any particular epidemic: on this account, I proceed to give a brief account of some of the most remarkable, that of Nimeguen, Marseilles, of Moscow, of Egypt, and of Noja.

1. Diemerbroeck observed the following symptoms in the plague which desolated Nimeguen, from the beginning of November, in 1635, until that of March, in 1637.

Agitation, extreme anxiety, often considerable internal heat, pains of the head seldom lancinating, generally dull and heavy, terror, delirium, convulsive itchings, and slight contractions of the limbs: continual somnolence in some, profound stupor in others, deranged vision, tinnitus aurium, deafness in some: dryness, and sometimes, though seldom, blackness of the tongue; fetor of the mouth, and sweat; syncope, pulse often strong and natural, sometimes weak, frequent and unequal, in some, intermittent,

in many, very small, frequent, sometimes regular, and sometimes the reverse. Hemoptysis, small dry cough, thirst, want of appetite, pain at the orifice of the stomach, nausea, vomiting, hiccough, alvine dejections, crude, extremely fetid, containing worms; pernicious diarrhœa. Urine, in many, not varying from that of health; in others, scanty and crude, and sometimes, likewise turbid; in some, healthy and turbid in the same day; occasionally, sanguinolent. In some, sudden prostration of muscular force and difficulty in moving, from the commencement of the attack; in others, the strength continuing unimpaired to the last. Heat of the body, in some acrid to the touch, and in others, natural. Complexion pale in some, and erysipelatous in others, in many, varying but little from a state of health. Spots of a purple, red, violet, or black colour, sometimes very numerous, small or large, almost always round, appearing sometimes on one part of the body, sometimes on another, occasionally, over the whole surface. Glandular tumours behind the ears, on the neck, in the arm-pits and groins; carbuncles on different parts of the body.

All these phenomena did not constantly appear in every subject. Buboes were considered one of the most certain signs of the pestilential character of the epidemic, as well as carbuncle and exanthems. The carbuncles usually commenced with one or two small pustules of the size of a grain of millet: as they increased in size, the subjacent part died as though it had been cauterized, and it became black. Several of these pustules coalesced, and formed a single one, filled with a black ichor, around which a high inflammation was developed. Among the carbuncles, some were small, others large; sometimes they were observed to extend to a distance, and occasioned, in a short time, gangrene of the neighbouring parts.

The disease appeared after a damp spring, during a very hot and dry summer; the following winter was not very cold, nor was it remarkable for either dryness or humidity. The epidemic raged with the utmost violence from the end of April to the end of October: it ceased on the commencement of frost. The number of deaths was immense, no house escaped. Diemerbroeck believed that it communicated itself equally by mediate and immediate contact.* He considered it as originating

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* Tractatus de Peste. Amsterdam, in 4to, p. 17, et seq.

in an atmospheric cause, of a very malignant, occult, and poisonous character, existing in the air. Impurity of the atmosphere, individual constitution, local causes, and bad regimen, were, according to him, only circumstances favourable to the development of the action of this occult cause. He adopted in full, the opinion of Fracastor and Mercuriale, with regard to the proximate cause, and the propagation of the plague.

2. The plague of Marseilles was often preceded by disgust, nausea, vertigo, and pains in the legs; sometimes it supervened suddenly, and almost always commenced with a slight chill, præcordial uneasiness, nausea, vomiting, often by the discharge of a quantity of worms, by headache, dizziness; the rigor was always succeeded by a violent fever, attended with acrid and burning heat. Yet the disease presented itself under two different forms: sometimes the symptoms were of slight intensity for several days, and sometimes they were violent from the commencement. In the first case, recovery occurred with considerable frequency; in the second, some died suddenly within six or eight hours, some in twenty-four hours, the greater number in two or three days. When the disease continued longer than the third day, there was a hope of recovery, and when convalescence occurred in any case, eruptions appeared, and developed themselves more and more; in fatal cases they did not occur, or they disappeared. This disappearance of the eruptions was always followed by death, which sometimes supervened unexpectedly, when the patient was much better, and thought himself cured. Petechiæ, far from being a happy omen, like bubo and anthrax, almost always indicated a fatal termination, especially when they became black. Buboes appeared in the groin, often lower down, in the arm-pits, the neck, and on the parotids; their appearance in the commencement afforded no grounds of prognosis; those which appeared on the second or third day, generally coincided with a diminution of the other symptoms; those of the neck and parotids were almost always followed by death; when they were double, they occasioned suffocation. The suppuration of the buboes did not commence until the disease diminished. The carbuncles and pustules appeared at all periods of the disease, on every part of the body, often below the buboes: their appearance was almost always followed by a melioration of the condition of the patient, but those of the neck almost al-

ways preceded a fatal termination.   The pustules resembled small and very painful boils, red at the base, and white at the summit, which dried and became black; the tumour then extended, and the neighbouring parts became hard, and the redness diminished. When they appeared over the buboes and parotids, death was to be apprehended.

The most usual symptoms, in addition to those which have been pointed out, were syncope, oppression, diarrhœa, frequently a considerable discharge of worms, hemorrhage, stupor, delirium, frequently convulsions, except when there were no eruptions, or when they developed themselves slowly.   The tongue was generally white and loaded, the thirst excessive, even when the fever was slightest, the eyes were sparkling, even during syncope, the countenance exhibited terror, as in hydrophobia. The excrements were not very fetid; the urine, almost always natural, was sometimes covered with an oily pellicle; sometimes it was slightly red, especially on the first day, and when the fever was violent; in some cases it was very red, and almost of the colour of blood.   After the lapse of some days, a sweetish odour was perceptible, especially when the patient perspired; this odour was very disagreeable, although not very strong; it was communicated to every thing which had been used by the patients, even to the furniture and chambers, and it did not disappear until the tainted articles had been washed in boiling water, and exposed a long time to the air.

When recovery occurred, it was generally from the eighth to the tenth day, or, at least, after this period; if some symptoms still continued, the patient was, nevertheless, out of danger: all that was necessary was a continuance of the local treatment of the buboes and carbuncles.

This is the brief description given by Bertrand of a disease which, according to official documents, destroyed more than thirty-nine thousand of the inhabitants of Marseilles; and, according to this author, fifty thousand from the 10th of July, 1720, to the month of February, 1721.   It first appeared among the poor, in a crowded street.   The first patient had only a single carbuncle; by degrees the number of patients increased; carbuncles and buboes appeared in great numbers; as early as the 20th of July, the mortality was frightful: after the 1st of August, the disease pervaded every district of the town: before the

10th of this month, it was almost in every street, and in the middle of the month in almost every house: during the rest of the month, and the whole of September, a thousand sometimes died in a day: in October it was less fatal, and it gradually abated in the following months. The rich were its victims as well as the poor. Infants and women were first attacked, and then adults: decrepit old men alone were spared. The town was covered with the sick, abandoned with horror by their relations, or who had left their houses for the purpose of gaining admission into the hospitals. Heaps of bodies were seen in the streets, exposed to the rays of the sun for more than three weeks, and serving as food for dogs.

According to Bertrand, and most of the other physicians of Marseilles, the cause of this plague was an unknown matter, imported by a vessel which had arrived from Sidon, in Syria, on the 25th of May, 1720, and the crew of which entered the town on the 4th of June. The porters who opened the bales of cotton, with which this vessel was freighted, were immediately attacked with continued fever, attended with small pulse, pain in the head, nausea, and vomiting; in some cases without any external affection, in others, with buboes and pustules. After this a woman died with a carbuncle on her lip, another with a carbuncle on her nose, and a third with buboes: after these, all the inhabitants of the street were affected. The disease first appeared in the houses nearest that of the first of these three women. It first assailed dealers in old clothes, tailors, and smugglers. The men employed in removing the dead bodies, almost all perished. The convents, which preserved themselves in a state of strict isolation, escaped. Every circumstance proves that the disease was communicated to the healthy by the sick; that the contact of the patients, or of articles belonging to them or the inspiration of the miasm exhaled by the former, or adhering to the latter, should be classed among the circumstances which favour the development of this disease, if they were not the only causes of the epidemic.

Deidier, Chicoyneau, Verny, and Soulier attributed this disease solely to an unequal temperature and errors in diet; but the physicians of Marseilles, on the one hand, deny these two circumstances, and, on the other, ask why they should have produced such frightful results in 1820 and 1821, when they had occa-

sioned nothing of the same kind in 1719. Deidier asserts that a woman died with an inflammation of the parotid gland, that another had a carbuncle, and a third a bubo, with fever, before the arrival of the suspected vessel. The last two did not die. Does the carbuncle of the second fully demonstrate that the plague existed at Marseilles on the 9th of May? It certainly is true that the guardians of the public health were very culpable in not strictly enforcing the sanitary regulations in the case of the vessel from Sidon.

If Chicoyneau, Verny, and Soulier displayed more complaisance than logic, in their opinion with regard to the propagation of the plague, the latter, nevertheless, examined bodies in the presence of his colleagues. Three patients were examined who had been affected with irregular chills, universal coldness, a pulse very small, soft, frequent, unequal, concentrated, considerable weight of the head, a giddiness, resembling that of intoxication, the looks fixed, the eye dull, speech slow, interrupted, plaintive, expressing terror: the tongue at first white, towards the termination dry, reddish, black, rough; the face pale, leaden, languid, cadaverous; præcordial distress, frequent nausea, great inquietude, general prostration, absence of mind, stupor, nausea, vomiting; they died before the third day, without any eruption, tumour, or spot. On dissection, the viscera of the abdomen and chest were found livid, blackish, or of a deep red; the vessels were filled with blood of the same colour. Reticulated vessels appeared upon the membranes, enveloping the intestines, stomach, lungs, and pericardium; neither the head nor the digestive canal were opened.

Six patients, of full and robust habit, presented the same symptoms as the preceding; but in them, after the rigors, the pulse was active and developed, yielding readily to pressure; they had experienced, internally, a burning heat, a moderate degree of heat externally, unquenchable thirst: their speech was rapid and stammering, their eyes reddish, wandering, sparkling; the face of a bright, and sometimes of a livid red; less præcordial distress than in the preceding cases; respiration frequent, laborious, or large and unfrequent, without cough or pain; nausea, bilious, greenish, blackish, and bloody vomiting; diarrhœa of the same kind, without any pain or tension of the abdomen; delirium; urine often natural, sometimes turbid, whitish, blackish,

bloody; sweat somewhat fetid, and succeeded by great debility; small hemorrhage, always followed by the same result; great prostration and terror; finally, from the commencement, very painful buboes, carbuncles, whitish pustules, or purple spots; the vessels of the brain, those of its membranes and the sinuses, were found filled with blackish and coagulated blood; there was gangrenous inflammation of the lungs; the heart and liver, which were very large, were without change of colour or alteration of texture; the gall-bladder, stomach, and intestines were filled with bile of a deep green; the glands, which formed the buboes, were gangrenous, blackish, livid, and purulent. These disorders were common to six bodies; in some there were internal carbuncles; livid and purple spots, similar to those of the exterior of the body, affecting the stomach, which was filled with worms, and with a blackish and horribly fetid blood. Yet the authors who report these facts, assure us that none of the dead bodies exhaled an offensive odour, like that of persons who die of hospital gangrene, which has been of some continuance. It would appear that they examined the digestive canal merely with the view of discovering what liquids they contained, for they mention but once the state of the mucous membrane.

Soulier also opened three bodies at Aix. Besides the common derangement, he found in one a carbuncle of a black colour in the ilium; in another, the internal membrane of the intestines was marked by a number of purple spots, in a third, it was marked with black patches.

Couzier opened eleven bodies at Alais, one of the towns of Provence in which the plague appeared. In almost every case he found, besides the traces of cerebral congestion, and of inflammation of the meninges, an enlargement of the heart and liver, bile in the digestive canal, purple spots and carbuncles on the lungs, on the internal as well as the external surface of the stomach and small intestines, upon the epiploon, the mesentery, the liver, the pericardium, the gall-bladder, the diaphragm, the kidneys, the abdominal aorta, and even the pancreas. The viscera are here mentioned in the order of the frequency of their alterations. *

* Observations et Reflections touchant le Nature les Evenemens et le Traitement de la Peste de Marseille. Lyons, 1721, in 12mo.

3. Samoïlowitz distinguished in the plague of Russia three stages or degrees: the first characterized usually by buboes alone, occasionally by petechiæ, always of a small size, very seldom by carbuncles, and by pains in the head and vomiting; the second characterized by continued headach and repeated vomitings, by large, black, and confluent petechiæ, which, on the approach of death, were transformed into yellowish pustules, below which, on examination is found a carbuncle; finally, by very few buboes: in the third period, to the preceding phenomena is added delirium.   To these symptoms must be added the following, which announced or accompanied the development of this disease: deep sadness, weeping without cause, considerable prostration, slight rigour, vertigo, weight and pain of the head, sometimes very acute, a little above the frontal sinuses, eyes painful, watery, prominent, looks fixed or wandering, sense of weight in the eye-lids; internal and external heat, burning skin, tongue dry, covered with a thick, yellowish coating: sometimes no change in the colour of the tongue: face pale and emaciated, insupportable anxiety, agitation, frequent syncope, nausea, vomiting of food, or of yellowish or greenish matters, trembling, somnolence, sudden starting from sleep with alarm, embarrassment in speech, aphony, terror, incontinence of urine, diarrhœa; in women menorrhagy or abortion; in men sometimes epistaxis, or hemorrhage from the fauces.   Instead of somnolence, there was frequently delirium, which ceasing suddenly in one or two days, indicated the approach of death, which usually occurred in the evening, or during the night. *

The plague of Russia was attributed to the communication of the soldiers with the Turks. Samoïlowitz has collected the facts which tend to prove that it communicated itself by contact, and that the only means of escaping was by avoiding all communication with the sick, or at least by not touching them, or any article which had been in contact with them. It continued from the month of April, 1771, to March, 1772, and destroyed 133,299 persons, 7268 in August, 21,404 in September, 17,561 in October, 5,233 in November, the months during which it raged with the greatest activity.

* Memoire sur la Peste qui en 1771 ravaged l'empire de Russie et surtout Moscou, le capitale. Paris, 1783, in 8vo.

Samoïlowitz opened no bodies during this epidemic, because he found such researches of little utility; but, at a later period, having made no satisfactory discovery with regard to the nature of plague, by means of the microscope, with which he examined the pus of the buboes, while he was at Cherson, he finally decided on making dissections. The articulations of these subjects were flexible, and their flesh very soft. He remarks, that he found all the internal parts of the head in the same state as after death from ordinary causes; the intestines, stomach, gall-bladder, and the other parts of the abdomen were a little swelled, the great lobe of the liver slightly inflamed, the diaphragm, lungs and pericardium in a healthy condition; no blood in the ventricles of the heart, but a yellowish matter resembling goose-grease, and therefore analogous to the concretions since found in the bodies of subjects who had died of yellow fever. Samoïlowitz made a chymical analysis of this yellow matter, and concluded, 1st, That the plague has its seat in the heart; 2dly, That the pestilential poison is only a fluid oily matter; 3dly, That this poison acts upon the body by contact. This only proves the facility with which Samoïlowitz drew conclusions, and that he opened but few bodies.

4. The plague which ravaged the French army in Egypt afforded M. Desgenettes an opportunity of making important remarks with regard to this disease. His language is as follows:—

" The plague is endemic in Lower Egypt, and along the coast of Syria, since it has reigned there for some ages, and since it has been observed a hundred times in places which had no kind of communication with each other.

" The plague generally appeared at a particular season, but there have been instances of its occurrence at all periods of the year."

" Southern winds, a hot and damp air, favour, if they do not alone produce its development. Northern winds and the extremes of heat and cold entirely arrest it."

" The plague more particularly attacks men, who, from their occupation, are under the necessity of passing suddenly from a hot to a cold atmosphere, or *vice versa:* such as bakers, smiths, cooks, &c.; women, young persons, even infants at the breast, have generally resisted the epidemic better than the most robust men.

"Permanent drains, such as issues and setons, cutaneous eruptions, such as herpes and itch, venereal diseases, recent wounds, or ulcers, with copious suppuration, were no preventives of the plague.

"This disease has diverse degrees of intensity. First degree: slight fever without delirium, buboes: almost all these patients are easily and rapidly cured. Second degree: fever, delirium, and buboes; the delirium becomes mitigated towards the fifth day, and terminates, as well as the fever, towards the seventh: many are cured. Third degree: fever, considerable delirium, buboes, carbuncles, and petechiæ, separated or united, remission or death from the third to the fifth or sixth day: very few cures.

"Notwithstanding the serious character of the third species, cures have been observed entirely due to nature.

"The plague of the year VII. was very fatal; in that of VIII. and IX. about one-third were cured. In the year IX. more than a third were cured, and in some circumstances nearly one-half. The young negroes and the Syrians attached to the army suffered peculiarly. Men addicted to ardent spirits and women were seldom cured.

"The plague is evidently contagious, but the conditions of the communication of this contagion are not more exactly known than its specific nature. The dead bodies did not appear to communicate it. The body, while affected with febrile heat, and still more with febrile moisture, appeared to communicate it more readily. The river Nile was observed to be a barrier to the progress of the contagion. A simple ditch made before a camp, arrested its ravages, and it was especially upon observations of this nature that the French system of isolation, which was found so advantageous, was founded.

"Knowing how prejudicial an influence the use of a particular term sometimes exerts over the minds of men, I always refused to pronounce the word plague. I thought it my duty, under these circumstances, to treat the whole army as a patient, to whom it is, in almost every case, unnecessary, and often very prejudicial to inform with regard to his disease, when it is of a very critical character."*

Laveresi states that the plague declared itself by a slight pain

* Histoire Medicale de l'Armée d'Orient. Paris, 1802; 2d edition, Paris, 1830, in 8vo.

of the head, or an inclination to vomit, redness of the tongue, ardent heat and dryness of the skin, hardness and frequency of pulse. On the second or third day the inguinal glands were enlarged, with considerable pain. The bodies were in general marked with livid spots, particularly on the face and genital parts: many were perfectly gangrenous, and others without any external mark. Lavaresi opened three of the latter, and found the internal surface of the stomach and intestines covered with a yellowish mucus; the conglobate glands were very hard, but they had diminished considerably in size.* This physician was certainly not much versed in this kind of researches.

M. Larrey opened two bodies at Jaffa: the first, covered with petechiæ, exhaled a nauseating odour: the abdomen was meteorized; the great epiploon was yellow, and marked with gangrenous spots, the intestines distended, and of a brownish colour; the stomach collapsed and gangrenous in several spots, corresponding to the pylorus; the liver of greater size than ordinary; the gall-bladder full of a black and fetid bile; the lungs of a dull white, variegated with black lines; the heart of a pale red, and easily torn; the auricles and ventricles were full of black and liquid blood; the bronchia containing a reddish and muddy fluid. In the second body, the derangements were nearly the same; the liver was more engorged, the gall-bladder enormously distended; the pericardium full of a bloody humour, and the cellular tissue exhibiting a net-work of varicose veins full of black and liquid blood. M. Larrey remarked the same peculiarity in many other bodies which he opened in Egypt: circumstances did not permit him to open the cranium.†

5. The plague which desolated Noja from the 23d of November, 1815, to the 7th of June, 1816, affected 928 persons, in a population of 5615, and destroyed 716 persons: of these, 334 were men, and 382 women; 623 poor, 3 rich, and ninety tradesmen; 225 between the ages of one day and ten years, 157 between eleven and twenty, 118 between twenty-one and thirty, 145 between thirty-one and fifty, 66 between fifty-one and seventy, and 5 between seventy-one and ninety; 309 died in the first three days, 302 from the third to the seventh, 73 from the

* Essai sur la Topographie Physique et Medicale de Damiette dans l'Histoire Medicale de l'Armée d'Orient, p. 89.

† Mem. de Chir. Milit. Paris, 1812, in 8vo. p. 326.

seventh to the fourteenth, 29 from the fourteenth to the thirty-
eighth; 3 in November, 36 in December, 237 in January, 157
in February, 144 in March, 52 in April, 81 in May, and 6 in
June. Seventy-eight died during the same period without having
presented symptoms of the plague.   Thus, in the space of six
months, 212 persons were cured; viz. 97 men and 115 women,
155 poor, 10 rich, and 47 tradesmen; 37 from one day to ten
years of age, 48 from eleven to twenty, 58 from twenty-one to
thirty, 62 from thirty-one to fifty, and seven from fifty-one to
seventy.   Besides these, 546 persons were suspected of being
affected, and were therefore watched.

It was characterized by the following symptoms: prostration of
strength, rigor, violent fever, with remission scarcely percepti-
ble, headach, ardent thirst, extreme heat, pale, livid, or yellow-
ish complexion, dilatation of the pupil, injection of the eyes,
tongue crimson in the centre, white at the edges, vomiting,
worms, diarrhœa, malaise, anorexia, inability to retain nourish-
ment, incoherent language, furious delirium, stammering, con-
fusion of ideas, paralysis, apathy, entangled hair, dry and rough
skin, hemorrhage, anthrax, buboes, petechiæ, vibices, miliary
eruption, gangrene, sometimes sudden death.

This plague was always attributed to a morbid, asthenic dia-
thesis.

The means employed were—water and vinegar, or lemon
juice to the anthrax, until the falling of the eschar; afterwards
the usual dressing of ordinary wounds; friction with oil over the
buboes, cold effusions to the head in delirium; decoction of bark,
internally, after some eccoprotics; acidulated drinks.   Emetics,
purgatives, nervines, antimonials, the mineral acids, anodynes,
the actual cautery, epispastics and mercury were either useless
or hurtful.

The articulations of the dead bodies soon became flexible, and
the limbs were supple.   They presented, externally, large livid
marks, where the parts of the body came in contact; the genital
parts, the seat of the buboes and anthrax, and the circumference
of the nose, were covered with marked spots of an obscure vio-
let colour, with small whitish striæ.   On the 23d of March, the
bodies of Felix Bueno, aged twenty years, and of Rose Lioce,
aged five years, who had experienced all the symptoms of the
plague, were opened in the midst of the cemetery.   The three

cavities were examined with great care, and no morbid altera-
tion of the viscera was discovered; every thing was natural.

I confess it is very easy, while enjoying security, to censure
those, who, surrounded with the horrors of the plague, had not
sufficient resolution to devote themselves to the researches of
pathological anatomy; I shall not, therefore, reproach MM. Ru-
bino, Doleo, Garron and Perron: but it will be confessed that no
positive conclusion can be deduced from two examinations so
briefly reported, without any account of the symptoms present-
ed by the subjects during life. We are bound, however, to con-
cede the utmost praise to the care with which the tables of mor-
tality, of which we have given a summary, were collected.*

6. While the French army were in the Morea in 1828, M.
Bobillier had an opportunity of observing the plague. Some
Arabian slaves having brought the plague from Hydra to Argus,
it was transported from the latter town to Vrachy by a retailer
of clothes, who died of it. All who suffered from it contracted
it by contagion. In all it developed itself by a gastro-encepha-
lic irritation, the symptoms of which were those which have
been pointed out by Chirac, Mertens, Bertrand and Desgenettes.
In a single subject, the irritation of the brain appeared to pre-
cede that of the other organs. In all, the buboes, anthrax, and
carbuncle, supervened after the development of the gastro-ence-
phalitis. Almost all the subjects perished: one hundred and
sixty-one out of one hundred and sixty-four.

If we institute a comparison between the typhus and the
plague, we cannot but be struck by their surprising analogy.
This marked analogy could not escape the observation of M.
Desgenettes: who, in an immense and very crowded hospital,
has seen an anthrax complicate the typhus fever, and impress
upon it the character of pestilential fever. Since these diseases
differ but little, since, as it regards the symptoms, there is no
difference except in the frequency of buboes and anthrax in one
and their rare occurrence in the other, are we not authorized to

* Storia della Peste di Noja de Vitangelo, Morea. Naples, 1817, in 8vo.
" La lingua presentava una cotenna formata de tre strisce, cremisi, al di
mezzo, e biancastre à lati, sebbeni poi nel corso della malattia avese presen-
tate altre variazioni essendo stata in alcuni biancastra ed in altri con simplici
cotenna gialla (Doleo.) Lingua tremula, arida, giallognola; o constrisce bi-
ancastre à lati e rosso-fosche in mezzo (Rubino.")

conclude, that the plague is only the highest grade of a disease, of which the typhus is one of the most dangerous shades, and of which the yellow fever is likewise a variety?

To admit only a difference of intensity and of seat, between sporadic, adynamic and ataxic fevers, the typhus, the yellow fever and the plague, is, I think, required by the knowledge we derive from the morbid phenomena.   It is probable that this opinion would be supported by pathological anatomy in case a greater number of those destroyed by the plague were examined, and the organic alterations described with the accuracy which is exhibited at the present day in these researches.   The researches of Soulier, Couzier, Deidier, and of M. Larrey, afford us a glimpse of such a result.   The purple spots mentioned by them were doubtless only patches, of a more or less deep red, which are found on the opening of dead bodies, after many adynamic and ataxic fevers.   The internal and external carbuncles of the abdominal viscera were likewise only black patches circumscribed or surrounded with an areola of deep red, which are often observed on the internal surface or on the peritoneal surface of the stomach and intestines, and of which, not many days since, I observed a striking example, in a young officer to whom an emetic had been given in the commencement of gastritis.   The red, black and gangrenous spots, the manifest effects of an inflammation which only ceased with life, existed also in the lungs and several other organs in many of the subjects, a fact which points out an affinity between the plague and yellow fever; except that in the latter the black spots are less frequent than in the former.

Considered then, in its symptoms and in the morbid traces impressed by it upon the organs, the plague is not a disease so different from other grave fevers, as not to have numerous points of resemblance; it may even be said that the points of resemblance are more numerous than those of difference.   This will completely explain the uncertainty of physicians with regard to the time of its commencement and the difficulty of pointing out with accuracy the period of its cessation.

After having investigated the only resemblances and differences by which we can distinguish between the plague and other

* Dict. des Sc. Med. xv. p. 458.

destructive fevers, I shall not farther seek, in the occult causes of these diseases, a reason for separating them or classing them together. A sound physiology would teach us to study the circumstances which hasten or retard the development of diseases, the phenomena which characterize them, the traces which they leave in the body, and the comparative results of the different methods of practice: an investigation of occult causes should be abandoned to men whose fertile imagination disdains the restraints of cool reason.

M. Le Chevalier de Butel has endeavoured to demonstrate, that Egypt is not the cradle of the plague, and that the one which ravaged it in 1791, was as evidently imported from Constantinople, as that of Marseilles was from Sidon.* But, must we believe, that the plague does not develop itself in Egypt but when it is brought from Constantinople? Certainly not; for if the plague originates at Constantinople from a contempt of the laws of Hygeia, this neglect is not less great in modern Egypt. Most of the Mahometan countries are subject to the plague; they reciprocally give and receive it: the same was the case in Europe before any sanitary measures were instituted.

Treatment of the Plague.

Since the plague seems to have developed itself in Europe, only in consequence of commercial relations with the east and Africa, until the contrary is clearly demonstrated, prudence imperiously demands the most scrupulous precautions in our lazarets; the interests of humanity are paramount to those of commerce. It is important, then, that every physician be penetrated with the precepts and examples given in the works of Diemerbroeck, of Cardinal Gastaldi, and M. Desgenettes. In their writings are found, not only an exposition of the precautions necessary against this scourge, but likewise an indication of those to which we must resort, when it declares itself notwithstanding these preventive measures. Both are referrible to the general views which I have pointed out when upon the subject of typhus, with this difference, that in typhus, it is less necessary to avoid the contact

* Memoire sur le Peste, dans le Journ. Univ. des Sc. Med., xlic. vol. p. 5. Janvier, 1826.

of patients, than the inspiration of the air which surrounds them, while it is necessary to avoid touching articles belonging to plague-patients as cautiously as the patients themselves.

As long as the plague was attributed to a subtle poison, which being introduced into the human body, reached the heart and paralyzed its action, it was natural to seek a mode of expelling this poison or of neutralizing its effects; on this account the strongest cordials were chosen, and especially those which were regarded as powerful sudorifics. It was the more readily believed, that to cure this disease it was necessary to expel it by the skin, as the appearance of buboes and carbuncles at the highest stage of the disease was regarded, not as a sign, but as the natural means of approaching recovery. What better course could be pursued, than to listen to the dictates of both nature and theory? Notwithstanding the innumerable deaths which attested at least the inefficacy of this method, it was as perseveringly followed as though it had been almost universally successful; it was, however, perceived at last, that these cordials and sudorifics, so far from favouring, only embarrassed the operations of nature, and frequently to the great injury of the sick; that is to say, they died in greater numbers and more rapidly. The necessity was then recognised, of employing only the lightest cordials. The same was the case with regard to purgatives and emetics, employed with the view of expelling the poison upwards and downwards. Blood-letting, which was recommended by many physicians, as a proper means of purifying the blood from this same poison, and of correcting the inflammatory and putrid disposition of this fluid, was copiously practised: but as it appeared very frequently to hasten death, it was at last abandoned.

It appears, said J. B. Bertrand, that a disease of so extraordinary a nature, requires but few remedies, and generally those of a very simple and common character; a strict police, great care of the patients, and especially very prudent and attentive physicians. This physician neither rejected nor lauded any measure: he endeavoured to turn to the advantage of the patient all the means afforded by pharmacy and surgery. However, it will be seen, that his method was not based upon the condition of the affected organs, although he laid down excellent principles intermingled with the most improper.

He advised, that the abstraction of blood should never be co-

pious or frequent; that purgation should be gentle; that these measures should be resorted to only on the first day of the disease, and not in an advanced state of the eruptions. If the pulse was full and strong and the headache violent, he abstracted six ounces of blood. He seldom repeated this measure. Afterwards, when the patient experienced nausea, he gave him tartar emetic; if of a full and robust habit, he purged with ipecacuanha: if he was delicate, he gave both tartar emetic and ipecacuanha, but in very small doses. If the tartar emetic only occasioned vomiting, he prescribed immediately after a gentle purgative, or a lavement. When the pulse was neither full nor elevated, he did not prescribe blood-letting, and he commenced the treatment by giving tartar emetic, always in small doses, provided this remedy was in the slightest degree indicated. If the patient was of a full habit, and one in whom much *corruption* of the primæ viæ might be suspected, he only gave a gentle purgative in a small dose, such as rhubarb, tamarinds, cassia, manna, syrup of roses. He purged no more in the course of the disease, provided it was not of prolonged duration, and provided the nausea did not continue after the emetic; for in the latter case he gave a purgative potion in small and repeated doses, until there had been two or three stools: after which, if the patient was prostrated and the pulse depressed, he prescribed a mild sudorific and alexiteric, with which he always combined a small quantity of diascordium, to allay the effect of the purgative. He then recurred again to venesection, especially when there was delirium or stupor or increased headache. The blood was taken from the foot. He prescribed at the same time simple emulsions, chicken water taken with moderation to prevent the too great relaxation of the belly; for, he remarked, it was always necessary to guard against diarrhœa in this disease. After the emetic or purgative, or at the commencement, when these means had not been indicated, if the pulse was very active, Bertrand prescribed toast and water acidulated; if the pulse was slow and feeble, he prescribed mild alexiterics until the tumours and carbuncles made their appearance.

Strong narcotics threw the sick into a state of debility, from which they were with difficulty restored, into a fatal stupor, especially when they were given at the decline. Bertrand employed only the mildest articles of this class, and in small doses

in case of delirium or violent agitation.   Against the diarrhœa,
he administered diascordium combined with absorbents; to coun-
teract vomiting, he recommended diluents and the potion of Ri-
vière: when the latter was suddenly arrested, colic and a burn-
ing sensation of the intestines supervened, which only ceased
with life. A copious diarrhœa, and that which arose from purga-
tives was always fatal. Hemorrhage was sometimes followed by
recovery.   Sweats which had not been strongly solicited by me-
dicine, were a favourable sign; when they supervened naturally,
it was sufficient to administer, with the view of favouring them,
sudorifics of the mildest kind, such as the water of Centaurea be-
nedicta, powder of viper, and lilium.   The cardiac and alexite-
ric medicines were useful, only when the prostration was extra-
ordinary.   When the oppression arose from engorgement of the
chest, he recommended small bleedings; but when it was in con-
sequence of the suppression of cutaneous transpiration, or of cold
contracted by the patient, in uncovering himself, or was conse-
quent on the recession of some external eruption, he administered
mild sudorifics.   Bertrand, hence inferred that it was necessary
to cover the patients well, and he was persuaded of the utility
of this practice, because he observed that those who had a slight
moisture of the skin during the disease, almost always recovered.
The regimen was that of acute diseases generally.

The method pursued by Bertrand, is deserving of praise on
many accounts.   We perceive that this physician endeavoured
to avoid the excess of Chirac in blood-letting, and the impru-
dence exhibited by other physicians in the use of emetics, pur-
gatives, sudorifics, and alexiterics; that his talents, by no means
of an ordinary character, enabled him to remark, notwithstand-
ing the theories of the schools, the bad effects of the last four
measures, and that although he did not dare to proscribe them,
he at least used them with great reserve.   The same spirit of
observation showed him that blood-letting was indicated in some
cases; he therefore prescribed it, but this was at the commence-
ment, and he was of opinion that it should not be abundant.

M. Desgenettes recommended bleeding in the plague of Egypt
when inflammation was very intense, and it was practised with
success.

For what reason did Bertrand administer tartar emetic and
ipecacuanha at the same time, to persons of delicate constitu-

tions? Why did he resort to tartar emetic in almost every case, and to purgatives in all the others? This was, doubtless, in consequence of some prejudice of his medical education. We cannot be ignorant at the present day, why fever lights itself up afresh after the action of tartar emetic or a purgative, and if we admire the wisdom of the physician, who, under such circumstances, repeated the abstraction of blood, we cannot but deplore the necessity which he had created. The drinks which he prescribed were most proper, but why did he fear lest they should induce diarrhœa by relaxing too much the abdomen? At least it is not difficult to believe him, when he says that diarrhœa was always to be apprehended; that after vomiting and purging, the weakness increased as well as the smallness of the pulse, and that mild alexiterics were probably but little adapted to the state of the digestive passages. Narcotics are, at the present day, justly banished from the treatment of delirium; we know that the diascordium, sometimes only suspends diarrhœa to make it reappear afterwards, in a more violent form; we know too, why acute pain in the abdomen supervenes when this medicine suddenly suppresses diarrhœa: it is well known at the present day, that this pretended calmant, arrests diarrhœa only by augmenting the irritation of the intestinal mucous membrane.

It would be difficult to tell what difference Bertrand could perceive between oppression caused by engorgement of the chest, and that which, according to him, was caused by the suppression of perspiration, or by the sudden chilling of the body. In a disease which leaves after death, very frequent traces of inflammation, we are disposed to believe that it might be useful to preserve the patients from cold; and we may also readily believe, that when oppression is accompanied with signs which denote inflammation of the lung, bleeding prescribed with less reserve, might not be without advantage.

The local treatment of the plague, that is, the treatment required by the buboes and anthrax, are not unimportant. Bertrand reprobates the practice, equally barbarous and dangerous, of extirpation.

M. Larrey applied cataplasms of squills, roasted in the ashes, to accelerate inflammation and induce the formation of pus. Without waiting their maturation, he opened them with the knife. When they were indolent and without any change in the

colour of the skin, he employed the actual cautery, and imme-
diately after a cataplasm. This means, which provoked inflam-
mation and suppuration, appeared to him to contribute to the
cure: he preferred it to caustic potash, the action of which is
slower. He covered the carbuncles with hot and rubefacient
cataplasms, he scarified them, cauterized them with corrosive li-
quids, and removed the gangrenous parts with the knife. He
thought, I know not for what reason, that the dressings of the
buboes should not only be simple and suppurative, but tonic
also.

The efficacy of friction with ice, which was reported by Sa-
moïlowitz, being founded only upon three cases, in which too
this author employed a number of other means, we must await
the result of more extended observation, before we pronounce on
its utility.

Some facts seem to favour the belief that friction with warm
olive oil may afford protection against the plague, and even that
it has sometimes been efficacious in the treatment of this dis-
ease. [*]

" The indications," says Cullen, " to be fulfilled in the cure
of plague, are the same as in fevers generally." The plague
only appearing at distant intervals in Europe, physicians cannot
do better than conform to this principle in the treatment of the
disease. Far from obeying the pusillanimous advice of Galen,
and imitating the timidity of Sydenham, let us always remem-
ber this sentiment of Diemerbroeck: " Quapropter dico è locis
pestilentia infestatis, cuilibet fugere licere, exceptis eis, qui spe-
ciali officio proximis et reipublicæ sunt devincti: quales sunt ma-
gistratus, verbi divini ministri, medici, chirurgi, obstetrices,
alique similes, quos pietas fugere vetat et quorum opera respub-
lica tali imprimis tempore carere nequit."

[*] Histoire Medicale de l'Armée d'Orient. 2d edit. p. 36. Paris, 1830.

CHAPTER X.

Of Quarantine.

WHEN treating of typhus, the yellow fever, and plague, we spoke of the propagation of these diseases, and of the measures to be taken in consequence. But there is a point of the highest moment, common to these diseases, which merits special attention: that of quarantine.

Among the diseases which ravage our population, there are some which are considered as imported from distant countries, because they appear without manifest local causes, and after communication with the countries in which they frequently prevail. These diseases have been called contagious, from a comparison with those affections which are evidently the result of contact: they should be, and doubtless will ultimately be, named, *importable;* because this word presents clearly the idea of the fact which necessitates our precautionary measures, without any reference to the manner in which the communication of the disease takes place. Thus, we shall designate by the name of *importable* diseases, those which are, or appear to be, capable of passing from one country to another, through the medium of persons and things.

The variola, the venereal disease, and the itch, for example, are manifestly *importable;* and yet no preventive measures are instituted against them. Yet the first is often of most fatal character, the second, one of the most cruel scourges of humanity, and the third, one of the most disgusting affections. But the variola, although capable of being imported, develops itself among ourselves, without having been imported. Long habit has to a certain degree familiarized us to venereal diseases, because they do not often prove fatal; and the itch is nearly confined to the lower orders. The variola has, moreover, found in vaccination an adversary, the efficacy of which renders preventive measures

still less necessary. Venereal diseases could not be made the objects of legislative enactment without rendering necessary the most disgusting investigations.

It is desirable, that every traveller, soldier, and sailor, who, on entering the frontiers of our territory, either by sea or by land, is affected with the small pox, should be treated in a hospital, until properly cured. With regard to venereal diseases, this measure could not be enforced, except in the case of soldiers and sailors, and among them it is enforced, wherever the officers are deeply sensible of their duties, not only to the state, but also to their fellow citizens.

Although scarcely any thing is done to prevent the introduction of diseases, manifestly importable, yet much is done to prevent that of diseases of which the importable character is not so clearly demonstrated.*

Whence is it that in cases in which the necessity is not clear, the whole power of the institutions of the country has been employed, while there has been complete inaction in cases which admit of no doubt? The cause, no doubt, of this difference in the government, is to be found in the effects of the diseases which have been the objects of their legislative enactments. However destructive may be the variola, however dreadful the venereal disease, and however disgusting the itch, they cannot be compared to those diseases which desolate whole towns and provinces, and sweep away one-fourth of the population. The greatness of the danger has awakened attention: thus, the violence of the disease has given strength to the suspicion of its importability, and the government, the interposition of which was invoked by the public voice, could not await, and indeed ought not to have awaited, the slow result of methodical observation. Quarantine has, therefore, been established by law: and the diseases against which it has been established, have ceased to appear where they formerly developed themselves with extreme violence.

Is all the good effected by quarantine which is attributed to it? Could it effect more? Does not the system of quarantine pre-

* No one is more inimical than I am to neologism, when without utility: but, whenever it is necessary to fix the attention upon a fact, it is proper to designate it by a special word, which is conformable to the genius of the language, and which recalls it most distinctly.

sent abuses, which might be corrected without diminishing its utility? Is it susceptible of advantageous modifications? Such are the important questions to which the attention of the friends of humanity and science should be directed, and which I can only glance at. It is much to be wished, that a complete work should be published upon this important subject.

Quarantine has preserved France from the importation of the plague: this seems a matter of certainty. It is a fact, however, that the plague desolated Marseilles, although the quarantine laws were in operation; but who does not know that the best institutions may suffer from a relaxation of discipline? Moreover, the principles upon which quarantine is based, are not unmixed with hypothesis, and it is not certain that they are of such a character as to produce the greatest possible good. If it be the fact, as is believed by many, that some regulations respected solely for their antiquity, absorb the attention which might be more usefully bestowed upon other points, might not quarantine become at the same time less inconvenient, and more efficacious?

Has the quarantine preserved France from the yellow fever? This disease, fortunately having never reigned epidemically in our country, it cannot be decided whether we have been preserved by quarantine, or by circumstances independent of all human intervention. Before, and since the establishment of quarantine in France, the plague prevailed in the southern provinces: before and since its establishment, the yellow fever has not appeared, although the communication has been frequent between the ports of Spain and France.

Has quarantine preserved France from the importation of typhus? We are in want of facts to enable us to pronounce upon this point: it is not generally by sea that communication exists with those countries in which this disease prevails. It has only been brought among us in the train of our armies, and convoys of prisoners, or it has developed itself in crowded hospitals. The typhus of the ships which ravaged Brest, was a melancholy exception: such was the malignity of the disease, that it bid defiance to every barrier.

The infrequency of the lepra is not owing to quarantine regulations; for by this name formerly were designated a number of diseases of the skin, which have since received other names,

and the lepra itself still exists on the coasts of the Mediterranean. It has disappeared only as civilization has advanced.

It is only at the present day that the Indian cholera is classed among diseases, which should be made the objects of quarantine regulations: as it respects France, the quarantine regulations with regard to this disease, arose from an excessive precaution, inspired by excessive fear.

Let us not entertain the absurd notion, that every disease which rages in a neighbouring country is importable: it is enough that the magic name of contagion is incessantly repeated, even in our villages, on the occasion of the slightest disease, by busy bodies, who every day invoke epidemics in expectation of the benefactions of Artaxerxes.

The plague of the east, the yellow fever, the typhus of camps, hospitals, and ships, the lepra and cholera of India, are the diseases against the importation of which quarantine is established; these diseases being, it is said, if not always, at least very often, contagious. This assertion is not too strong, perhaps it is not strong enough, when applied to the plague: but with regard to the yellow fever, it certainly exceeds the lessons of experience; more is asserted than our positive information with regard to typhus justifies; and the importability of the cholera into France is assumed gratuitously. When it is asserted, that "it does not appear that leprosy can be transmitted by merchandise," it may be asked, are articles of merchandise more frequently touched by those who are confined to their beds by the plague, yellow fever, and typhus, than by the leprous?

It is manifest, that in France the leprosy and cholera morbus should be immediately rejected from the number of diseases subjected to quarantine regulations.

To suppress the sanitary laws directed against the plague, would be wantonly to expose the country to all the calamities of the plague of Marseilles.

With regard to typhus fever, the interests of the population of the ports, rather than of the interior, requires the separation of persons arriving with this disease, the exposure to the air of articles which have been about them, and the disinfecting of the vessels in which they arrived.

The great question of the yellow fever is undecided: yet the labour of M. Chervin, the report made to the Royal Academy

of Sciences, and that which has been sanctioned by the Royal
Academy of Medicine, induce us to think that the non-conta-
gion of this disease will soon be admitted as an established fact,
by a great majority of the physicians of the two worlds. The
yellow fever will then no longer be regarded as the object of
quarantine regulations. Until then, these safeguards of the pub-
lic health should be respected. It is, however, proper to inquire
whether the administration of quarantine could not be improved.

The symptoms of the plague, those of typhus, and of yellow fe-
ver, have been laid down in a system of instructions, which are
to serve as a guide in the application of the sanitary laws.

The symptoms of the plague are pointed out with a degree of
precision, which leaves no room for error. A single page com-
prises the whole description. We think it may properly be in-
troduced in this place.

" The signs of the plague of the east, are a continued fever,
animated face, and injected eyes: frequently a stupid air, and a
sense of general torpor; in walking, the step is doubtful, and of-
ten staggering; difficulty of combining ideas, the fixity upon
some particular object, which is generally one of terror: men
noted for their contempt of danger become most pusillanimous.
The symptoms which have been enumerated, whether isolated
or united, are still equivocal and common to other diseases. The
positive or indubitable signs of plague, are the following: 1st,
Buboes in the groin, in the arm-pits, in the angles of the jaws,
conjoined with all, or with some of the symptoms which have
been mentioned; 2dly, Pestilential anthrax or carbuncle, pete-
chiæ, which are superficial spots, at first red, afterwards black,
more or less extended, distinct or confluent, on different parts of
the body, and especially upon the neck, the anterior parts of
the chest, and the inferior extremities; 3dly, To the symptoms
above enumerated, whether all, or only a part of them occur, is
often joined, (and nothing is more dangerous,) a high degree of
delirium, accompanied by fever of a very ardent character, and
very abundant sweats always inducing a debility which gradu-
ally extinguishes life. The plague continues seven or nine days,
and seldom fourteen days. Sometimes it lasts only a few hours,
and men fall down dead who were not supposed to have been
affected. Under these circumstances, they present no apprecia-
ble symptoms of the plague, and their death is generally occa-

sioned by apoplexy or internal hemorrhage, which some obser-
vations permit us to attribute to the destruction of the large
vessels, attacked by carbuncles occurring over their course."

Here is nothing vague and indeterminate; the insufficiency of
the common signs are pointed out; they are not dwelt upon, and
they are not given as sufficient reasons for the enforcement of
quarantine.   For what reason should the phenomena be more
amply detailed, which, instead of removing uncertainty, occa-
sion it?   Would it have been wise to assign them as motives
proper to decide the necessity of so important a measure as the
performance of quarantine?

With regard to the yellow fever, a different course has been
pursued; the signs of this disease are divided into two classes:
the one class, which consists of such as lead to a suspicion of
yellow fever, and which should occasion a probationary quaran-
tine, are; " Sudden and violent accession of fever, without pre-
cursory symptoms, commencing with a rigor of considerable du-
ration; acute and obstinate internal pain, fixed in the forehead;
insomnolence, or frightful dreams, if there is somnolence; red-
ness of the balls of the eyes; air of inquietude, affright and asto-
nishment; tongue red at its edges and at its point, but covered
on its middle with a white or slightly yellow coating, often very
dry towards the termination of the disease; frequent attempts to
vomit; acute pain in the stomach; lacerating pains of the kid-
neys; difficult respiration; frequent sighs; pulse at first hard and
strong, returning in the middle period of the disease to a state
nearly natural, and terminating by being small and excessively
weak; in some patients, spots; petechiæ; in others, large brown
patches, especially at the approach of death; three distinct pe-
riods in the course of the disease, characterized in the following
manner: the first, by an acute irritation, continuing from two to
three days; the second, by a deceptive calm, lasting from twen-
ty-four to thirty-six hours; the third, by all the symptoms which
announce trouble and disorder in the functions: it generally con-
tinues from the fifth to the seventh day.   In the first period, the
face is animated, often very red; in the second, it is pale; in the
third, it is of a decided yellow colour.   When its course is more
rapid, the periods are confounded, and the patients die on the
second, third, or fourth day: the usual duration, however, of the
fever is from five to seven days.

From this exposition, it manifestly appears that a ship, on board of which is found any sick person, should be suspected of having the yellow fever, and therefore obliged to undergo a probationary quarantine. In fact, there is not a single acute disease which may not exhibit some one of these characters. In all acute diseases the accession may be sudden and violent, and announced by a rigor; the forehead may be painful, there may be insomnolence, or the sleep may be troubled with dreams, or there may be very marked somnolence; the conjunctiva may be red, the countenance anxious, the tongue red upon its edges and at its point, covered with a white yellow coating in the cen-tre, very dry at the termination of the disease; in all there may be frequent retchings, pains in the stomach and lumbar regions, embarrassed respiration and frequent sighing. The pulse, at first, hard and strong, then almost natural, is necessarily small and weak on the approach of the fatal termination. Spots which are not described, should not be laid down as characteristic signs, Petechiæ do not belong to the yellow fever. Large and brown spots are not uncommon in other diseases of seamen.

The three periods of yellow fever are an unequivocal sign of its presence, according to many physicians who have seen it; they are, however, ranged here among signs of mere probability —and are mingled with signs of so insignificant a character, that we cannot explain how men of intelligence could give them as reasons for suspecting the existence of a disease which should render quarantine necessary. The yellow colour of the skin, from which as being the most conspicuous phenomenon, the disease has derived its name, is found inappropriately placed among symptoms common to all diseases; but farther on, we find it among the unequivocal symptoms: the description is vague and dangerous, and betrays a singular want of clearness in the ideas of the persons who dictated this part of the instructions. It is evident, that in giving this exposition of the symptoms which should lead to the suspicion of yellow fever, it was thought ne-cessary to compose a piece of nosology, in which every thing should be said, while all that was necessary was a medical docu-ment, in which that alone should find a place, which might be essential in the administration of quarantine. It has not been perceived that in consequence of this minute enumeration of symptoms, which, with two exceptions, belong no more to the

yellow fever than to any other disease, every subject affected with cerebral and pulmonary congestion, and with gastro-intestinal ir-ritation, should be suspected on his arrival in port. The suspi-cion would be greater, *if he died* during the passage. Ac-cording to these instructions, it is sufficient cause for the qua-rantine of a vessel, that a sailor dying after an illness of a few days, during a voyage, should have had, in the course of his disease, injected eyes, retching and spots which might be scor-butic.

But it may be said that it is desirable that such a result should be produced by the code of instruction, since the country will by this means, be infallibly preserved from this scourge. Such should not be the language of science, nor such the plan of sanitary administration; exaggeration subserves the cause of nei-ther justice nor prudence. If it be deemed proper, that every ship, on board of which a single death occurs, should be sent into quarantine, it would be sufficient to lay down this regula-tion; there would be no need of these detailed instructions. Or let the law go still farther, and order a rigorous quarantine for every vessel at every period. But if, from a regard to prudence and a proper respect for the liberty of individuals, it is desired to enforce this measure only when it is necessary, let the cir-cumstances which necessitate it be clearly laid down. By in-creasing the inconvenience of sanitary regulations, the tempta-tion to evade them becomes greater; to give efficacy to the laws, they must be laid down with precision—a power which is vague and undefined loses its influence or becomes insupportable.

The symptoms, pointed out in the instructions as indicating the real presence of yellow fever, and as requiring the enforce-ment of rigorous quarantine, present no uncertainty: " Discharge of blood more or less copiously by the mouth or anus; the blood, likewise, sometimes escapes by other orifices; evacuations of mat-ters, having generally the colour of coffee-grounds, and some-times black; they are discharged by the mouth, the anus, or the bladder; jaundice, which may be confined to the eye-balls or to the face, or which may extend over the whole body; suppression of urine.

We perceive, that the yellow colour of the skin is presented both among the certain and uncertain signs: this is faulty. As to the suppression of the urine, it is enough to have seen fevers

of a grave character, of whatever nature, to be convinced that it is not a special sign of yellow fever, although it is a very frequent one in this disease.

There is no doubt but that the cases have been unnecessarily multiplied in which a quarantine of observation is required on account of a suspicion of yellow fever: even should the contagion of this disease be admitted, it is certain that the part of the instructions which relate to the doubtful signs of this disease, should be revised.

In typhus, the doubtful signs are not distinguished from those which are certain: whence we may conclude, that this part of the instruction, which should be uniform and consistent throughout, is the work of different hands.

" At the accession, lassitude, interrupted sleep, trembling of the hands, stupor, fever; acrid and biting heat of the skin, vertigo, head heavy, and, as it were, in a state of drunkeness; animated countenance, signs of pulmonary catarrh. Pulse, at first active, full, hard, and afterwards embarrassed, obscure, unequal; tongue at first white or yellow, afterwards acrid, hard, trembling, retracted, black; eyes brilliant in the commencement, afterwards dull and bordered with hardened rheum; lips and teeth covered with a blackish coating: on the fourth day the appearance of a purple or marbled exanthem, or of petechiæ or inflammation of the parotid glands. Afterwards, prostration of strength, trembling of the limbs, of the lower jaw, subsultus tendinum, weakened vision, deafness, disturbance of the intellectual faculties; wild and frightful dreams, delirium, sometimes a fixed and predominant idea; abdomen painful and distended; offensive breath, cold sweats, having the odour of mice; fetid liquid dejections, which are sometimes bloody, involuntary, cadaverous; nasal hemorrhage, sometimes gangrenous eschars, seldom buboes; urine at first red, scanty, burning, sometimes suppressed, towards the termination abundant, turbid, sometimes involuntary. An acute disease, which comes to a crisis from the seventh to the fourteenth day by the urine, sweat, stools, hemorrhages, sputa, salivation, often fatal, particularly among great collections of men; it is then eminently contagious, and rapidly fatal.

Much might be said on the subject of this collection of signs, some of which are common to all fatal diseases, and others of little importance. At least no classification of them has been

attempted: the appreciation of their importance is left to profes-
sional men, to whose memory they are recalled, and who are not
obliged to declare from a literal construction of the instruc-
tions, that there is suspicion, when they do not conscientiously
think so.

Should men, unacquainted with medical science, be called upon
to pronounce with regard to sanitary measures by the aid of these
tables of diagnosis, the impropriety would be still more marked,
of laying down signs without any real value, which, to minds
operated upon by a very excusable fear, would appear of formi-
dable importance.

The vague character of the instructions relative to acute diseases,
deemed contagious, and the special importance erroneously attri-
buted to symptoms common to other diseases, would frequently
have the effect of classing ships not only under the *patente brute,*
but also under the *patente suspecte,** and in consequence the *qua-
rantine of rigour* appointed in both cases would be enforced.

This quarantine on the shores of the ocean, and of the British
Channel, is from five to twenty days for the *patente suspecte,*
and from ten to thirty days for the *patente brute.* On the coasts
of the Mediterranean, and on the frontiers in the interior, from
ten to thirty days for the *patente suspecte,* and from fifteen to
forty days for the *patente brute.*

Let it be remarked, that on the northern and western coast of
France, a vessel carrying the *patente suspecte,* is in certain
cases subjected to a quarantine of twenty days, while a vessel
with the *patente brute* may only perform a quarantine of only ten
days.   In the same manner, on the coasts of the Mediterranean,
the first may perform a quarantine of thirty days, while the se-
cond is released in half this period.

* With a view to ascertain the propriety in each case, of a more or less rigo-
rous quarantine, letters patent are given by the consuls of the different ports,
indicating the circumstances under which the vessel sails in relation to conta-
gious diseases.   The *patente nette* declares, that the vessel is entirely free
from the suspicion of any contagious or infectious disease.

The *patente suspecte* declares the existence in the country, of a disease of
a malignant character, which is communicable and is suspected of being
pestilential, or it declares that there is a free communication with the cara-
vans arriving from places in which the plague or yellow fever is prevailing.

The *patente brute* declares, that a contagious disease rages in the country
from which the vessel sails, or in the neighbourhood, and that merchandise
from this country forms part of the cargo.—(TRANS.)

It is impossible to assign a reasonable motive for so singular a difference. It is manifest that the quarantine should always be longer in the case of a convicted vessel than when there is doubt. This manifest contradiction exposes the want of facts upon which a proper decision might have been founded. There is also a deplorable defect of logic, or rather routine has triumphed over the intelligence of the distinguished men who were consulted by the authorities.

The quarantine of rigour has for its object " to subject merchandise to the purification necessary for the destruction of the germs of contagion with which it may be infected."

This is to pursue a retrograde march towards the infancy of science, when it was believed that aromatic vapours had the power of neutralizing the deleterious action of putrid miasms. The same erroneous mode of reasoning was extended to corpuscles inappreciable to the senses, and these fumigations were thought capable of destroying pestilential miasms.

Aromatic fumigations are of no utility; the future alone must decide with regard to the power so greatly exaggerated of the chlorurets: but, above all, the persons and things suspected should be exposed thoroughly to the action of air and water; the former should, as far as possible, be exempted from a wearisome confinement, the inconveniences of necessary seclusion should be alleviated by all possible means, and the customary ridiculous fumigations should be banished.

It may be objected, that precautions in reality useless, might become useful by their moral influence: to produce this effect, however, it would be necessary that persons performing quarantine, should be convinced of its necessity and of the utility of the fumigations; now it does not appear that upon these two points public opinion has manifested a spirit of great docility.

If a ship carries a *patente nette* declaring that the crew and passengers were in good health at the moment of departure; that in the country from which they sailed the public health was good; that there existed no suspicion of pestilential disease, or that a pestilential disease which had prevailed had ceased for more than forty days; that in the neighbouring countries and in those with which there was a free communication, there was no suspicion of pestilential disease; that the countries, which had furnished the cargo of the vessel, were likewise free from all suspicion; if,

farthermore, the crew and the passengers are in good health on their arrival; if, when there have been diseases on board, these diseases have presented no suspicion of contagion, or have ceased for more than forty days; if, during the voyage, the ship has not touched at any suspected or infected port; if there has been no contact with suspected or contagious merchandise; if the sanitary department have received no intelligence announcing the appearance of some contagious or doubtful disease in the country of departure; if, finally, the papers on board are in due form; if it is evident that there has been no alteration with the view of concealing the truth; if all questions are satisfactorily answered, and there are sufficient reasons for confidence and security, you would doubtless believe that the vessel would be admitted without difficulty; this, however, is by no means the case: this ship, with the crew and cargo, may be subjected to a quarantine of observation, lasting from two to five days: that is to say, a ship which there is no reason to suspect, may be treated in the same manner as a ship which has had communication with places, persons or things infected with contagion; nor is it indicated under what circumstances the *patente nette* shall have its full effect.

A French ship coming from Martinico arrives at Cadiz, and being examined with care, is pronounced free from suspicion: after five days, she sails for France, and on arriving in one of our ports is condemned to a quarantine of twenty days, as though she had come directly from Martinico.

This distinction of the patent into *nette* and *brute*, is evidently only a cloak for arbitrary power: the only distinction of vessels should be into *healthy*, *suspected* and *convicted*; the first, free immediately after examination; the second, subjected to a probationary quarantine for a space of time proportioned to probability of its infection; the third, subjected to isolation, the action of the air and water during the time deemed necessary in each case.

The term of forty days is not less arbitrary than any other: it is also necessary to extend it, when, during this time, pestilential diseases manifest themselves in the vessels in quarantine: in such cases every latitude is allowed to the sanitary authorities. What advantage, then, can be derived from laying down so complicated a system, and one which renders ships, which are not suspected, liable to a quarantine longer than that prescribed for infected ships?

The truth is that the law cannot, and therefore should not, attempt to provide specially for every case: when, however, it attempts to descend to details, it should leave nothing to the arbitrary will of the executive, otherwise it opens a door to caprice, routine and error.

Brief as these remarks have been, they suffice to demonstrate that our sanitary administration is not free from every objection in the principles of its application, and independently of all controversy with regard to its utility, which is incontestable in certain cases.—To glance at such a subject, is to perform but weakly a task which, doubtless, will be accomplished by some one having a better opportunity of observing the defects of quarantine, and of greater ability in exposing, but not by one more alive to the interests of truth, which are ultimately those of humanity also.

The person who shall undertake this useful task should be careful to show that the principles of quarantine adopted in the case of plague, even should their propriety be fully admitted, should not be rigorously applied in the case of yellow fever, but should be modified by the comparative remoteness of the places from which there is danger of importation.

In a certain part of France, which could be named, quarantine is perfectly illusory. The time may perhaps arrive when instead of placing vessels in the basins to stagnate, they will be subjected to a rigid inspection, and the owners compelled to be less economical in their repairs. Then the suspected vessels will not be those alone which have sick persons on board, or which come from places in which the yellow fever prevails, but all those which in consequence of neglect are greatly out of repair. Ships will then go into quarantine not to rot, but to be rendered sound.

CHAPTER XI.

*Of Intermittent Fever, and particularly of Benign Inter-
mittent Fever.*

WHEN Pinel reduced intermittent with continued fevers to a
limited number of orders, in the establishment of which he paid
no regard to the type, the eminent service he was rendering to
pathology was not properly appreciated. At the present day
many physicians are more than ever opposed to his opinion;
some influenced by the hope of finding in the history of inter-
mittent fevers arguments against the new theory of fevers in
general, others desirous of excusing their adherence to the new
doctrines, as far as regards continued fevers. Some timid par-
tisans of the new doctrines, are embarrassed when they are asked
whether they admit of an easy application to periodical fevers:
these are the motives which determine me to treat particularly of
these diseases.

Thus far I have not given the treatment of each of the con-
tinued fevers, until after an investigation of their nature and seat,
their symptoms, causes and organic alterations: but the ideas ge-
nerally entertained with regard to the nature of intermittent
fever, are too intimately allied to their treatment, to permit me
to pursue the same course. I shall therefore give the pathologi-
cal and therapeutic history of these fevers, as it is found in the
works which have hitherto been published upon the subject; I
shall investigate their nature and seat; I shall then inquire whe-
ther it be possible to render less empirical a mode of treatment,
the efficacy of which, in most cases, if not in all, is demonstrated
by experience.

It appears that it has not been thought enough to attach more

importance to the type of intermittent fever than to their symptoms, since most pyretologists have gone so far as to describe in the abstract a *regular* intermittent fever, *simple* or *legitimate,* which, according to the judicious remark of Pinel, is never met with in practice. Boerhaave, Stoll and authors of the present day who have copied them, describe it in the following manner:—

" It commences with yawning, pandiculation, lassitude, weakness, coldness, rigor, trembling, paleness, lividity of the extremities, difficult respiration, anxiety, nausea, vomiting, frequent pulse, sometimes more slow, feeble, small; excessive thirst; the skin covered with small miliary elevations, sometimes of a livid or purple colour; urine scanty and watery; frequently crying and convulsions in infants. This is the first or cold stage. The hot stage presents the following symptoms. Heat and redness of the skin, respiration strong, large, and more free; less anxiety: pulse larger and stronger; great thirst; acute pain in the head and limbs; urine generally red. This is succeeded by the third or sweating stage. Remission of all the symptoms, abundant sweat, turbid urine with lateritious sediment, liquid and fetid dejections, sleep, apyrexy, lassitude, weakness."

These symptoms are those which are found in the greater number of intermittent fevers. Those symptoms have been omitted which do not generally manifest themselves. The series of symptoms forms what is called a paroxysm, which is divided into three stages.

The duration of the first stage is from a few minutes to half an hour, and sometimes even five or six hours. The second stage lasts from one to two hours; it may continue four or five hours. The third stage varies in duration, but it is generally shorter than the second.

The paroxysm sometimes continues but an hour; generally from four to eight or twelve hours; seldom longer than from fifteen to twenty-eight hours.

The fever is called quotidian when it returns every day, when on alternate days, it is called *tertian;* when two days intervene between the paroxysms, it is called *quartan.* Quotidian paroxysms, returning at different hours, or differing in intensity and duration, &c., but corresponding on alternate days, constitute *double tertian.* Two paroxysms, occurring within twenty-four

hours, on alternate days, constitute doubled tertian, (tierce dou-
blée.)   The fever is triple when there are two paroxysms every
other day, and one on the intervening day.   A quadruple-tertian
has been mentioned, characterized by two paroxysms every day.
Paroxysms, occurring on the first and second day, and followed
respectively by a paroxysm on the fourth day after, characterize
the double quartan.   Two paroxysms in a day, separated by an
interval of two days, form the *doubled quartan*.   Three parox-
ysms every fourth day constitute the tripled quartan.   Finally,
a paroxysm every day, corresponding to that from which it is
separated, by the intervention of two paroxysms, constitutes the
triple quartan.   A quotidian may be *doubled*, and even *tripled*.
Some authors report a few instances of quintan, sextan, hebdo-
medary, octan, nonan, decimal, quatuor-decimal, quin-decimal,
mensual, bi-mensual, tri-mestrial, and annual intermittents.
These species are so rare, that they can be regarded only as ex-
ceptions to a general rule.   It is more common for the parox-
ysms to return at intermediate periods; constituting *irregular*,
erratic, or *atypic* intermittent fever.

The paroxysms generally occur in the morning in quotidian,
at noon in tertian, and in the afternoon in quartan fever; their
duration is longer in the first than in the second, and in the se-
cond than in the third.   The cold stage is shorter in the quoti-
dian, and the heat is moist and of little intensity, and the thirst
not so great as in the others.   The cold stage is more prolonged
in the quartan than in the quotidian, and less violent than in the
tertian; the pulse is concentrated and deep, and the patient ex-
periences a general sense of contusion; the heat is mild, but dry,
and the sweat moderate.   The cold stage is prolonged and in-
tense, the patient suffers internally, the thirst is excessive, the
heat is acrid, general, and of considerable intensity in the ter-
tian.

The tertian is the least obstinate of all; the quartan continues
longer; the former terminates spontaneously after four, five, se-
ven, or nine paroxysms; the latter frequently continues during
months and years; the duration of the quotidian is a mean be-
tween the other two.

The tertian and quotidian most frequently appear in spring,
and in adults of a sanguine or bilious temperament; ahe quartan
is most frequent in autumn, in persons of tender age, in lympha-

tic constitutions, and in women. Spring frequently puts an end
to an intermittent fever, to which autumn gave rise, and *vice
versa*.

The interval which separates the paroxysms has received the
name of *apyrexia;* in proportion to its duration, is the health
of the patient between the paroxysms; consequently, the health
is more perfect in the apyrexia of quartan fever than in that of
tertian, and in the apyrexia of the latter, than in that of quoti-
dians and double tertians. It is not, however, uncommon for
the patients to remain weak and pale, to suffer from heaviness of
the head, cold, want of appetite, and slowness of digestion,
during the apyrexial period. This state, which approaches that
of disease, becomes gradually established, and augments in in-
tensity as the fever becomes more ancient. The subject grows
thin, becomes sallow, and weak; the liver, the mesenteric glands,
and the spleen enlarge, the lungs become disorganized, the cel-
lular tissue becomes infiltrated, and dropsy supervenes.

Quotidian fevers are often observed to become continued, the
tertian becomes quotidian, and the quartan becomes tertian;
quartans and tertians, in some cases, terminate by assuming the
continued type. All these fevers may alternate with each other;
a fact which should not be forgotten, as it shows that the type
is only a circumstance of a purely secondary nature. When
the paroxysms of a quotidian fever, a double tertian, or a triple
quartan, are so near each other, that one hardly terminates be-
fore the other commences, this fever assumes the name of sub-
intrant. It is often difficult to distinguish it from a continued
fever, and the distinction is impossible, when the rigor is little
marked, and there is scarcely any apyrexy.

The paroxysms do not always return at equal intervals, espe-
cially in the first period of the disease, as well as at its decline.

Intermittent fevers, especially tertians, frequently cease spon-
taneously; more frequently they are prolonged from one season
to another; in certain situations they only cease to return on the
following year, or even sooner. If, in the acute state, they are
much less frequently fatal than continued fever, they gradually
destroy the subject when their course is not arrested.

Such is, in a general way, the history of the symptoms of
these fevers. But they have not been considered only in rela-
tion to their type. Those which manifest themselves in the

spring have received the name of *vernal:* that of *autumnal* has
been given to those which show themselves in autumn, and this
distinction appeared fundamental to Sydenham. They have been
farther divided into *exquisite* or *legitimate,* and *prolonged;* into
salubrious and insalubrious; into benign, which do not immedi-
ately threaten the life of the subject, and into pernicious, which
destroy him after a few paroxysms. The first of these divisions
has not been without its utility, because it has shown that the
intermittent fevers of spring generally present unequivocal in-
flammatory symptoms; the second is purely scholastic; the third
is founded upon erroneous opinion, viz. that fever may be the-
rapeutic or curative; the fourth is eminently useful in practice,
and it is on this account, that I have divided the history of in-
termittents into two chapters. The word *pernicious* is impro-
per, but it is sanctioned by use, and it would be inconvenient to
reject it before a more suitable one has been substituted.

Convinced that much less consideration is due to the type,
than to what is called the character, that is to say the symptoms,
Pinel, in bringing together intermittent and continued fevers,
has divided the former as well as the latter, into inflammatory,
gastric, mucous, adynamic, and ataxic—a luminous division, and
of great utility in an investigation of the nature and seat of these
fevers.

1st, Inflammatory intermittent fevers have been observed by
Sydenham, Pringle, Huxam, and Selle. M. Friseau has fur-
nished striking instances which I regret cannot be given in this
place.* If Pinel has reason to think that this name has been
given to many intermittent gastric fevers, he does not show him-
self consistent with his own principles, in not considering as in-
flammatory, those intermittent fevers in the second stage of
which the skin is red, hot, and halituous, the pulse large and
full: fevers of this character are not uncommon in spring. Some-
times, and most frequently, they depend upon an irritation of
the stomach, of little intensity, characterized by thirst, and red-
ness of the edges of the tongue. Sometimes they are caused by
insolation, and, in that case, depend upon irritation of the ence-
phalon, in which the digestive organs are more or less involved:

* Recherches et Observations pour servir a l'Histoire des Fievres Inter-
mittentes. Paris, 1803, in 8vo.

in this case, there is considerable heaviness of the head, the face is red, and the eye brilliant, especially in the second period. Finally, they are sometimes determined in young girls and plethoric women, by a momentary irritation of the uterus; in young men intemperately addicted to venery, they may arise from a bronchial or pleuritic irritation, which may become the origin of pulmonary phthisis. In the latter case, the stomach is but little irritated, or not at all so. We should farther class among inflammatory intermittents, those which are observed in subjects, in whom the bladder has been irritated by the presence of a sound, or by retention of urine, arising from stricture of the urethra, and, likewise those which are produced by the action of mechanical causes operating on other parts of the abdominal viscera.

Inflammatory intermittent fevers, generally tertian, sometimes quotidian, last but a short time, and are more frequently cured than the other types, without the interference of art, and never occasion very promptly the death of the patient: but they must not be abandoned to their natural course, because the causes which have produced them may occasion their continuance, and their transition to the chronic state: now every prolonged disease should be prevented or cured, whenever this can be effected.

2nd. Gastric intermittent fevers are the most common, and their analogy to continued gastric fever is most striking: they are generally tertian, double tertian, or quotidian, sometimes quartan, at other times, erratic. " The paroxysms occur," says Pinel, " most frequently in the morning, the rigor commences in the back, and is usually accompanied with general trembling: the pulse is weak and concentrated; there succeeds a heat which is acrid, dry and uniform over the whole surface, with intense thirst: the pulse is then frequent and developed, the face red and animated. The paroxysm terminates by a general sweat. This fever ceases after three, five, or seven paroxysms; or it is frequently prolonged beyond this period." To these symptoms, Pinel should have added nausea and vomiting, which occur almost constantly, the yellow colour surrounding the lips which often appears during the paroxysm, and which soon becomes habitual, when the disease is prolonged. He omits the weight and pain in the epigastrium, because he had mentioned it when treating of continued gastric fever, of which, according to him, the

intermittent is only a variety.   He has not mentioned the red-
ness of the borders of the tongue, because he was not aware of
the importance of this symptom, which, as well as the sensibi-
lity to pressure of the epigastrium, is not less marked in the in-
termittent gastric, than in the continued gastric fever.

The intermittent gastric fever is often the consequence of the
continued gastric fever, and it is not uncommon to see the
former succeeded by the latter.   Who then can deny the exist-
ence of gastro-enteritis in the one, and assert it in the other
case?

The gastric intermittent is more serious than the inflammatory
intermittent fever, and has a greater tendency to be prolonged,
and occasion profound alterations either in the stomach or intes-
tines, or in the viscera annexed to those of digestion, the liver,
for example, the spleen, and mesenteric glands.

The *mucous* intermittent fever, more common than the in-
flammatory, is not less so than the gastric in low and damp coun-
tries, especially in autumn.   It is generally quotidian, or quar-
tan, often erratic, sometimes tertian.   " The paroxysms occur
in the evening, and during the night; a horripilation constitutes
the rigor; it is seldom accompanied with trembling; the coldness
generally commences at the feet, and extends thence over the
whole body; it is frequently accompanied by nausea, vomiting,
cardialgia, abdominal tumefaction, alvine dejections and head-
ache; the pulse is slow and concentrated.   A moderate heat suc-
ceeds; it establishes itself slowly, and with irregular returns of
transient rigors.   In the second period, the thirst is moderate,
the pulse frequent, without being hard, the urine of a citron co-
lour, somnolence sometimes irresistible.   The third period is
characterized by a slight degree of moisture: there is frequently
an absence of all sweat in the first paroxysms.   The duration of
the paroxysm varies from three to ten hours, and upwards.   The
interval is generally marked by a sense of languor and weight.
This fever is often indefinitely prolonged, frequently from one
season to another.*

It is impossible to add to this description which has been
traced by the hand of a master; all the features of the disease
demonstrate that this fever is owing to the shade of gastro-ente-

* Nos. Phil. 1, p. 189.

ritis, which constitutes continued mucous fever. The latter assumes the intermittent type more frequently than the gastric fever, while the mucous intermittent less frequently becomes continued than the gastric intermittent fever. Less grave than the latter, the mucous intermittent is more susceptible of passing to the chronic state and of producing profound alterations in the mesenteric glands, the spleen, and liver.

4. The adynamic intermittent fever has been observed by Bayle; Pinel has seen some instances of it; he, however, thinks that facts of this kind are yet too limited in number, to permit us to describe with accuracy the distinctive character of this fever. " The *apyrexia*," he remarks, " *is hardly ever complete;* we observe this type of adynamic fever more particularly in subjects who have been debilitated by chronic affections, or by the lesion of some of the abdominal viscera. The paroxysms may be quotidian, double tertian, tertian, and quartan: they sometimes assume, alternately, these different types, while, at other times, they are irregular. The duration of adynamic intermittent fever is still less known; it often succeeds continued adynamic fever, by which, however, it is more frequently followed. It generally terminates fatally.

We could hardly imagine that the inflammation of the digestive organs, which constitutes adynamic fever, could manifest itself by intermittent symptoms, if the simple exposition which has just been given, did not establish the fact. May not the momentary exacerbation of a gastro-intestinal irritation, provoke during some hours, adynamic symptoms, in individuals whose constitutions have been impaired, since we observe all these symptoms establishing themselves in such subjects in less than twelve hours? The irritation having ceased or diminished in a very marked manner, it is natural that the phenomena which characterize it should equally cease. Let it also be remarked, that the apyrexia is never complete; there is then only a diminution of tha gastro-enteritis, and this diminution is sufficient to dissipate the sympathetic symptoms, which announce the exacerbation, and constitute the paroxysm. Finally, the adynamy is never so complete and well characterized in adynamic intermittent, as in adynamic continued fever, except in the last paroxysms, which approach each other and become confounded, when death is about to occur.

Is there not room to think that the periodical exacerbations of different chronic phlegmasiæ may give rise to paroxysms, which have been considered those of an essential adynamic fever?

"In ataxic intermittent fever," says Pinel, "we most frequently remark local anomalies, sometimes *personating* a phlegmasia, and sometimes having the character of a flux or neurosis; hence, the denomination of *pernicious* fevers."

"It is not uncommon," adds this author, "to observe in these diseases, lesions of several functions at once. The paroxysms may be quotidian, double tertian, tertian, and quartan; they sometimes assume, alternately, several of these types, and are frequently irregular. They sometimes go on increasing in violence, or are, alternately, violent, and the reverse. We are less acquainted with the duration of ataxic intermittent fever, than with that of continued; the danger is so great in the former, that we are obliged to suppress them as soon as possible, or, at least, to change their character. Abandoned to themselves, they are generally fatal, but they terminate happily immediately after the bark can be administered in an appropriate manner; they, however, sometimes pass to the state of ordinary intermittent fever, or into that of continued ataxic fever. A relapse is frequent, and occurs in a septenary period from the paroxysm. There is cause for great apprehension in ataxic intermittent fever, especially in the third or fourth paroxysm, if they have progressively increased, and are very intense, and if the bark has not been resorted to. The probability of recovery diminishes in proportion to the shortness of the intervals. The prognosis is also very alarming, when there is a tendency to a continued type. The symptoms which are of an ominous character in continued ataxic fever, are likewise so in ataxic intermittent."*

This very succinct exposition can only give an imperfect idea of pernicious intermittent fevers, and, on this account, they shall be made the subject of the following chapter.

Hildenbrand has mentioned an intermittent typhus, Deveze an intermittent yellow fever; Pinel believes, notwithstanding the opinion of Bertrand, that it is not demonstrated that the plague has been intermittent; as there are no positive observations illustrative of this point of doctrine, it appears to me unnecessary to dwell upon the subject.

* Nos. Phil. p. 256—291.

M. Broussais refers all the essential fevers of authors to gastro-enteritis, simple or complicated: it results from this, that he considers all intermittent fevers as periodical gastro-enteritis, simple or complicated, but he acknowledges that the encephalon and the other viscera sympathetically irritated, may become the principal seats of irritation, and be inflamed in a periodical or continued manner. This second proposition renders the first a little less exclusive: nevertheless, it is contrary to all experience to attribute all these fevers to gastro-enteritis; for, 1st, Those which have commenced with inflammation of the stomach and intestines, are no longer gastro-enteritis, when the encephalon or other viscera become the principal seat of inflammation. 2ndly, There are intermittents, without redness of the borders of the tongue, which, on the contrary, is white and moist, without thirst, and without pain of the epigastrium, even when pressure is made upon this region. Nothing authorizes us to attribute these fevers to gastro-enteritis, or we must consider all diseases as such in which there is reaction of the circulatory apparatus. Let the patients be examined attentively, and it will be found that the source of these fevers is in the encephalon, the lungs, uterus, and sometimes in the kidneys, or bladder.

It shall, perhaps, be demonstrated at a future period, that many intermittent fevers are owing to a periodical irritation of other viscera than those which have been just mentioned, but hitherto there has been no proof that the liver, the pancreas, the spleen, and mesenteric glands can be primitively irritated in these diseases. All that has been said by Galen, Spigel, and Senac, with regard to the part performed by these organs in the production of intermittent fever in general, should be applied to gastro-enteritis in the present state of the science, or, at least, to the secondary irritation, which they derive from the influence of this inflammation; without, however, compromising ourselves, by declaring beforehand against the ulterior results of observation. Certain facts induce me to believe that some intermittent fevers are owing to inflammation of the small intestine, or colon alone.

The duration of the rigor, always longer in intermittent, than in continued fevers, and the cough which almost always accompanies the paroxysms of the former, tend to prove that the viscera of the chest, and particularly the lungs, frequently suffer lesion in periodic fevers. Are the irritation of the lungs more

frequently intermittent than that of other organs? The present
state of the science does not permit us to decide this point.   In
more than one hundred cases of intermittent fever, observed by
M. Roche, he saw but a single case of intermittent pneumonia.
But it is certain, that chronic intermittent fever, and especially of
the erratic kind, is generally the result of a chronic phlegmasia
of the bronchia, the lungs, or the pleura.

It results from a comparison of the symptoms which charac-
terize intermittent fever with those of continued fever, that the
former are not more general than the latter, that they depend
equally on irritation, and that their seat is the same.   It remains
to examine whether intermittent fevers are not occasioned by
the irritation of certain organs, which are less frequently or less
acutely affected in continued fever: this point will, perhaps, be
at some future period elucidated by the progress of observation.

Dissection cannot here furnish a proof of this doctrine, since
death never occurs in the course of benign intermittents: we shall
inquire, in the following chapters, whether this kind be entirely
wanting.

The causes of intermittent fever are the same as those of con-
tinued fevers, but the former are more frequently than the latter
produced by the action of marsh effluvia on the economy; of all
the causes of intermittent fevers, these emanations are those
which most frequently occasion it; nevertheless, Cullen has done
wrong in not assigning other causes of these diseases. They may
be occasioned by exposure in time of rain, by repeated excesses
of the table, by prolonged and frequent watching, by a derange-
ment of the uterine functions, the suppression of any periodical
discharge, the cessation of a cerebral disease; finally, by an irri-
tation of the urinary organs, and particularly of the urethra.

In the vicinity of marshes, intermittent fevers prevail during
nearly the whole year, particularly in autumn and spring, and
few persons escape.   Those who have been only transient visit-
ers in the infected neighbourhood contract the disease, or rather
acquire such a predisposition to contract it, that the slightest
cause may afterwards develope it in them, even after they have
removed to a healthy situation.

After having considered the relation which exists between
the causes, nature, seat, and symptoms of continued fevers, it is
unnecessary to perform the same task in relation to intermittent

fevers, since they present the same symptoms, seat, nature, and causes.

But it is asserted by certain authors—1st, That the periodicity of a fever proves that it is not of the same nature as continued fevers; 2dly, That this periodicity indicates a seat different from that of continued fevers; 3dly, It is asked by those authors, why marsh effluvia produce intermittent rather than continued fever?

The periodicity of the morbid phenomena, designated by the name of fever, only proves that they depend upon a periodical organic affection, or one which is liable to exacerbations, characterized by these phenomena.

This intermission of the symptoms only proves that the irritation which occasions them yields after a certain period, diminishes, or ceases to provoke the sympathetic action of the organs in which they appear.

The intermittence of fevers has excited the attention of observers in every age, and they have endeavoured to account for it. Thus, they have been attributed by Thomas Willis to the periodical development in the blood of a fermentable matter; to the periodical introduction of the pancreatic juice, of too acid a character into the blood, by Fr. Deloboë; by Borelli to a successive irritation of the nervous extremities, of the nerves themselves, of the brain and motive fibres of the heart, occasioned by an acidity or acrimony developed in the nervous fluid. Torti has with reason asserted, that to these three hypotheses may be referred all those which have been proposed to account for the production of intermittent fever. The third has prevailed. Boerhaave and Stoll attributed the intermittent fever to an inexplicable affection of the nerves; Selle made it depend, in part, upon a peculiar irritability of the nervous system, and particularly of the nerves of the primæ viæ; J. P. Frank approximates to this opinion.

Reil has resorted to a very different mode of accounting for these diseases. Vitality is, according to him, liable to daily oscillations, announced by the greater frequency of the pulse towards evening: these oscillations, which are scarcely perceptible in the healthy subject, become very evident in the course of diseases: and hence the exacerbations which occur from evening till midnight, and the remission which follows. Reil conjectures that the daily oscillations do not correspond to each other, but

that they affect a tertian type, which become particularly manifest in the sick.   In this manner he accounts for the general existence of this type in intermittent as well as in continued fever, and the usual termination of acute fevers on the odd days; considering this law, however, as capable of being modified by a diversity of circumstances.   This author thought it absurd to assert that in the apyrexia of an intermittent fever the disease existed, although it did not manifest itself by any phenomena; for the same reason he rejected the distinction between periodical diseases and intermittent affections.   He then attributes the intermittence of diseases to that of organic action in general, and especially to that of nutrition.   The intermittence of vital action appeared to him to have some relation to that observed in the universe, both having, according to him, the same cause; which he confessed himself incapable of unfolding.*

These ingenious reasonings do not explain why certain causes occasion intermittent rather than continued diseases.   M. Roche has endeavoured to solve this problem.   He thinks that the causes which predispose to intermittent disease are always themselves of this character; that the causes which excite them are almost always intermittent; that sometimes the repeated action of these causes, sometimes the influence of habit, and often these two conditions united, cause the continuance of these diseases.   He bases these propositions on the following considerations:

Spring and autumn are, he observes, the seasons of the year in which intermittent irritations most ordinarily develop themselves: those which are produced by marsh miasmata almost always occur in the latter season.   A character common to these two seasons being to present a considerable difference between the temperature of the day and that of the night, and often in the course of a few hours, three or four very sensible variations in the temperature and humidity of the air, the result is a continual alternation of action and reaction in the human body, which at last contracts the habitude.   Night puts an end to these impressions, but they are renewed daily, and in this manner there arises a predisposition to intermission.   In this state, should a stimulus be applied to any organ whatever, it will the more

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* Analyse de la Pathologie generale de J. C. Reil, par M. Jourdan, dans le Journ. Univ. des Sc. Med. v. p. 44.

readily become the seat of an intermittent irritation, as its functions are already subject to a law of periodicity. Here the opinion of M. Roche approaches that of Reil.

" The action of marsh emanations," adds M. Roche, "is powerless, or nearly so, during a part of the day; but every day it is felt in all its force at nearly the same hour. The putrid animal and vegetable emanations of marshes are principally disengaged when the atmospheric heat is greatest; the caloric then hastens their development, and augments the evaporation of water, which is their vehicle. These deleterious agents are carried up by the water, reduced to vapour, and mixed with the nearest stratum of air. This stratum of air soon becomes heated, and lighter than that which is above it, rises and gives place to a second, which in its turn becomes saturated, rises and is replaced by another: this process continues until the sun sinks behind the horizon. Then the earth gradually cools, the temperature of the air which is nearest to it is reduced, occasioning its condensation, and in consequence a precipitation of a certain quantity of miasmata; as the cold increases, the quantity of the miasms deposited becomes greater. Condensed in this manner, and continually deposited upon the skin, the pulmonary and digestive passages, they exercise a powerful action, which cannot be felt during the day, since they are then carried with rapidity to a height in the atmosphere." The action of marsh miasmata is then intermittent.

These miasms, not being the sole cause of intermittent irritation, M. Roche hence concludes that they do not possess the specific property of giving rise to paroxysmal diseases. Shall it be said, that the repetition of paroxysms results from a peculiar modification of the tissue, the lesion of which occasions the sympathetic disturbance? He very properly considers this proposition destitute of force, since every vital phenomenon depends on a particular organic modification. He considers the repetition of the paroxysms as a consequence of that tendency of our tissues to repeat certain acts, only because those acts have already been executed several times. But the paroxysms are sometimes independent, and are only repeated because the causes are renewed: this is the case in those who are cured by their removal from the marshy districts, and when the paroxysms are separated by an interval of ten, fifteen, twenty or thirty days, and

more.   "Finally," says M. Roche, "the paroxysms are some-
times kept up both by habit and the continued action of the mi-
asms: this is the case with those who continue to reside in the
infected situations."

In this manner M. Roche thinks we can account for the inter-
mittence of irritations.   Intermittence of predisposing causes, in-
termittence of occasional causes, habit, intermittence of morbid
effects.   Such is, according to this author, the natural concate-
nation of facts, and the most natural explication which can be
given.

If it be objected that intermittents sometimes develop them-
selves in towns, during the most uniform temperature, under the
influence of some cause which has suddenly presented itself, such
as terror, aversion; and that then, at least, the intermittence of
the disease cannot be attributed to the intermittence of its cause,
he answers that the disease has been produced, or at least pre-
pared by periodical causes, the periodicity of which has not been
observed.   "Let the patients be interrogated," says he, "and
it will be discovered that one has every day endeavoured to re-
store his impaired appetite by highly seasoned food; another has
been excessive in the use of ardent spirits; another in the use of
coffee: in fact; that they all have transgressed the laws of Hy-
geia, at hours which have been nearly fixed.

The intermittence of periodical neuralgia, determined by in-
stantaneous causes, such as a fall, or the drawing of a tooth, ap-
peared to him to be referrible to the existence, in some subjects,
of so great a tendency to the repetition of sensations once expe-
rienced, that when a single impression of any power is made on
the organism, the sensation which accompanies it is renewed on
the next, and on the following days.

As to the diversity of types, he thinks that the cause of it
must be sought in the difference of the excitability of the sub-
jects, although he confesses that this point requires elucidation.*

The idea of attributing the intermittence of maladies to inter-
mittence of the causes which produce them, and to a tendency
of the organs to repeat movements which they have performed
once, and especially several times, appears to me to be very hap-

* Voy. la Refutation des Objections faites a la nouvelle doctrine, par M.
Roche, p. 159; et son Analyse de l'ouvrage de M. Mongellaz, dans les An-
nales de la Medicine Physiologique, vol. i. p. 116—127.

py. But the union of these two conditions is, I think, necessary to determine an intermittent disease; otherwise it will be asked, why, since intermittent morbific causes are the most frequent, intermittent diseases are the most rare. By admitting an organic predisposition, we explain why, in a marshy country, all the inhabitants, and all those who pass through it, do not contract the intermittent fever, even supposing the circumstances are the same in every case: we likewise, in this manner, account for the fact of marsh miasmata determining continued fevers in some.

Since marsh exhalations occasion, though more rarely, continued fevers; since intermittent fevers, even those which owe their origin to marsh exhalations, are frequently converted into continued fever; although marsh exhalations are the most common cause of intermittent fevers, we cannot hence conclude that the latter is of a different nature from the former.

When we compare two species, paying no regard to another which separates them in the natural order, we imagine that we observe between them a very marked disparity; but let the series be re-established, and this disparity in a great measure disappears.

It is in this manner that there appears to be a very marked difference between continued and intermittent fevers; but if we consider remittent and sub-intrant fevers as occupying the interval between them; if we reflect upon the frequent transformation of these fevers into each other, we can no longer assert that the difference of type is a certain index of a specific difference in the diseases. Here, perhaps, more than upon any other occasion, we should remember that our classifications are most frequently founded upon external appearances, which are only important as they affect our senses, and which in their nature are entirely secondary.

Many physicians are still of opinion, that fevers are intermittent, only because they have their seat in the nervous system. This opinion explains nothing; for it remains to inquire, why and how nervous fevers are intermittent,—in what intermittent nervous fevers differ from continued nervous fevers. Pinel has proved that intermittent fevers, which are said to be devoid of inflammatory, gastric, or mucous symptoms, appear to be so, only because they are still in their incipient stage, or are de-

clining, and consequently of little intensity.   I shall only add, that there is no intermittent fever without symptoms of irritation predominating in some part of the body, and that were there only the irritation of the heart, it should not be overlooked, and the seat of the disease vaguely referred to the nervous system.

And, after all, what are we to understand by this pathology? Is it meant that there is lesion of the whole nervous system in intermittent fever?   This would evidently be an erroneous idea; for what alteration is usually observed in the organs of sense? When we reflect upon the analogy of the effects on the organism of fear and cold to febrile phenomena, we are inclined to consider the brain as performing an important part in intermittent fever; at least this opinion is not devoid of all probability. But, if this organ is slightly irritated in many periodical, as well as in many continued fevers, this lesion is generally of so little intensity, that it would be blindness to attribute to it all the symptoms of the first; or, to be consistent, it would be necessary to refer to it the production of those which characterize the latter.   The brain suffers lesion only in some cases of inflammatory intermittent fever; it suffers in a less degree in some intermittent pernicious fevers: the highest degree of cerebral lesion occurs in pernicious fevers, which shall be treated of hereafter.

M. Guerin thinks that the cerebro-spinal nervous centres incontestably perform a part, even the principal part, as well in the production of the phenomena of intermittent fever as of those of fever in general, but that these fevers do not really exist with all the conditions which characterize them, with all their attributes; except, when by a direct action of the causes, or in consequence of sympathetic influences, or otherwise, the disturbance of the functions extends to the circulatory apparatus. The circulatory system then performs a necessary part in the production of the paroxysms of intermittent fever: now, this part manifestly consists only in the determination of blood to the diseased organs and its accumulation there.   It cannot, then, be asserted, in an absolute manner, that the intermittent fever has its seat in the nervous system.   Considering the fever in itself, or in its characteristic accidents, all of which are referrible to an excitement of the circulatory system; as frequency of pulse, heat, &c., we find that its positive seat, considered abstractedly from its type, is in the vascular system.   But, consi-

dering intermittent fevers in respect of their intermittence, and
the congestive phenomena of the paroxysms, we also find that
their first cause is very decidedly in the nervous system, and
that, in this point of view, we may regard these fevers as having
their seat there. Farthermore, M. Guerin, divides intermittent
fevers into those which depend upon a direct and primitive le-
sion, on a proper abnormal excitation of the cerebro-spinal cen-
tres, and those derived from a lesion, purely sympathetic, of the
same parts, their abnormal excitation arising from irritation ex-
isting in other parts of the economy. The first immediately
manifest the character of intermittence which is proper to them:
the others, at first continued, only assume the same character at
a later period. The local affection, in symptomatic intermittent
fever, is generally the principal morbid element; while, in idio-
pathic intermittent fever, the principal morbid element is the fe-
ver itself, or rather the lesion of the nervous centres which ex-
cites it, and the general reaction of the sanguine system which
characterizes and constitutes it to the eyes of the observer.

It then appears that M. Guerin beholds in intermittent fevers
only abnormal excitations of the cerebro-spinal centres, pro-
voking or complicating an afflux of the blood to other organs,
and its accumulation in them, congestions and irritations in other
points of the economy. He farthermore asserts, that, in indi-
viduals who die of intermittent fever, the cerebro-spinal centres
are usually found in a state of congestion; their substance is red,
softened, injected, infiltrated; the vessels are distended, gorged
with blood, and their connexions often inflamed.

Thus M. Guerin gives the name of idiopathic intermittent fe-
vers to primitive nervous sur-excitations characterized by perio-
dical symptoms; and that of symptomatic nervous fevers to ner-
vous sur-excitations characterized by periodical symptoms, but
derived from internal or external organic irritations.

Intermittent fevers are then, in his opinion, diseases more par-
ticularly nervous; and, since he regards the nervous system as
performing the first part in fevers in general, we have all fevers
ranked among diseases of the nervous system: if this be admit-
ted, we must, likewise, assign the same place to a great number of
phlegmasiæ, which commence absolutely in the same manner as
fevers. It remains to be determined, why intermittent fevers
are intermittent: the reason assigned is, that in them the affec-

tion predominates in the cerebro-spinal centres, while in conti-
nued fevers it occupies the whole circulatory system and gan-
glionic nervous apparatus, the cerebro-spinal system participating
only accidentally in a manner which is remote and unnecessary.
On the other hand, the vascular and ganglionic system are only
affected secondarily in intermittent fevers. We shall glance at
the manner in which M. Guerin applies these principles, when
on the subject of remittent fevers.

Doubtless, it may be asserted, that the nervous system per-
forms an important part in the production of fever in general,
and in that of intermittent fever in particular: it may be assert-
ed, that in the latter the nervous system performs the first part,
and the opinion may be supported by ingenious comparisons
with the phenomena of neuralgia and other affections more ma-
nifestly nervous. But the part which the ganglionic system per-
forms in a state of health is too imperfectly understood to per-
mit any positive assertions with regard to its influence in a state
of disease. Medical sophistry, which formerly found employ-
ment in the humours, at the present day takes refuge in the ner-
vous system. Let us regard the theories of M. Guerin and
others as ingenious views, which require the sanction of time,
and let us not hastily make them the basis of our therapeutic me-
thods: where experience speaks clearly, theory, if it has nothing
positive to offer, should be silent.

M. Guerin declines to give the name of inflammation to in-
termittent fevers: let him then decidedly trace such a line of de-
marcation between inflammation and sur-excitation, congestion
and irritation, as shall be adopted by the whole medical world.
Until this is done, sur-excitation, irritation, and phlegmasia shall
continue to be morbid states, slight and transient, or profound
and durable, or even irremediable, according to their degree and
energy, the duration of their causes, the disposition of the sub-
jects, the mode of treatment, &c. To endeavour to decide whe-
ther a disease has arrived at the degree of inflammation, can be
of no utility, except where inflammation would require some
specific remedy, which might be dangerous in the case of irrita-
tion, excitation, or congestion. But this is not the case, the
same means are applied in different degrees. The only diffe-
rence consists in more or less activity, the employment of deri-
vatives, and blood-letting, which varies with the symptoms,

the intensity of the disease, and the type, when it is intermittent.

It is with pleasure that we see the nervous system becoming the object of special researches; but, unfortunately, the subject of these researches are facts already known, and not new discoveries and new experiments. I know not why the various researches, with regard to an apparatus which connects all the organs, should not be united, and carried with utility into therapeutics.

The distinction established by M. Guerin between intermittent fevers, in which the cerebro-spinal system is primitively affected, and those in which it is only secondarily affected, would be of great utility were it only founded upon nature, notwithstanding the improper denominations he applies to them; but the means of making this distinction at the bed-side of the patient, presents a difficulty, even admitting that it is founded upon nature, which we must be allowed to doubt, as we have not been able to make it in practice. Many, before this author, were desirous of distinguishing intermittent fever into nervous, inflammatory, &c.; but none had given as primitive those which commence with the intermittent type, and as symptomatic, those which commence with the continued type. According to this view, every intermittent fever, properly so called, would be idiopathic, and the local affection connected with the reaction would be secondary. It was not worth while to take so much pains to return to the point of departure.

M. Alard places the seat of intermittent fever in the absorbent vessels, and he thinks that in this manner the type of these fevers can be accounted for; but for this it would be necessary that all intermittent fevers had their seat in the absorbent system. This objection is of equal force against the theory of authors who pretend to explain the intermittence of fevers by making them depend upon the nervous system.

Let the few physicians who at the present day pretend that there is something specific in intermittent fever, and who hence conclude that they are essential, state in what this specific something consists; let them declare its cause and nature, and the indications derived from it. Until then we shall continue to behold in intermittents only irritations of one or more organs,

giving rise to intermittent phenomena.   It is time that the known should take precedence of the unknown.

The fact of their intermittent character has been considered as proving that they could not be owing to an inflammation. But it has not been asserted that they were owing to an inflammation equally intense with that of the cellular tissue, and it is sufficient to admit that they depend on some one of the shades, sometimes slight, and sometimes intense, of this morbid state. I shall not stop here to prove, in opposition to the opinion of M. Tommasini, that inflammation, the best characterized, may appear under the intermittent type.   I appeal to experience and the knowledge of educated physicians, and, consequently, to M. Tommasini himself.   M. Tommasini thinks he has never, or at least very seldom, witnessed intermittent phlegmasiæ: this arises from his having considered those which presented themselves in the course of his practice as essential fevers.

If I have demonstrated that intermittent and continued fevers differ only in their type, and that a difference of type does not indicate a specific difference in the nature of the organic alteration, it has been proved that both these classes of fever depend upon a local irritation, the extent and depth of which it is desirable to study with more care than has hitherto been done.

Treatment of Intermittent Fevers, and especially of Benign Intermittent Fever.

The first question under the head of the treatment of these fevers, is whether it is proper to attempt their cure.   However absurd this question may appear, it has become necessary since Boerhaave was pleased to say that intermittent fever disposed to longevity.   The fact that in a very limited number of cases, melancholy, mania, gout, epilepsy, and palsy were observed to cease after its appearance, has given rise to the belief that this fever might sometimes be beneficial in its effects.

If it be true that the intermittent fever is so beneficial to maniacs, epileptics, the gouty, and paralytic, I know not why they should not be sent to the Pontine Marshes or to Batavia, instead of prescribing the pure air of the Pyrenees or of the Gold Coast. Let those, at least, who are free from these diseases get rid of

the intermittent fever as soon as possible; and let it suffice to re-
spect it in maniacs, epileptics, and paralytics, and even the gouty,
if they prefer the fever to the gout.

It is certain that in proportion to the repetition of the parox-
ysms of intermittent fever, when they do not progressively di-
minish in intensity, the subject becomes more or less rapidly de-
bilitated, the digestive organs become irritated, when they have
not been so before, and at last retain their irritation during the
apyrexia. The viscera, which co-operate in digestion, the liver,
spleen, and mesenteric glands become gradually affected: we
hope that this repetition will not be termed superfluous.

It may then be concluded, that it is important to arrest the par-
oxysms of an intermittent whenever it can be effected without
occasioning evils of a more serious nature, or at least equally se-
rious with those which are to be remedied. This distinction,
it is true, is not always readily made. It is believed, that in
many cases the remedial measures employed in intermittent fe-
ver appear to perpetuate it, and occasionally when they suppress
it, that they favour the morbid development of the spleen, the
liver, or mesenteric glands: the facts which establish this propo-
sition are too numerous to allow any doubts on the subject. They
have been the source of discussions which have never been
brought to a satisfactory conclusion.

It appears to me that the consequences, frequently unfortunate,
of the treatment generally employed, hitherto have arisen, 1st,
from the nature of the treatment; 2d, from the morbid predis-
position of the gastro-intestinal mucous membrane of the liver,
spleen, mesenteric glands or thoracic viscera; 3d, from the con-
tinuance of the morbific causes.

The first thing to be done for the cure of intermittent fever,
more especially than for that of any other fever, is to investigate
with care all the circumstances to which the patient is subjected.
If, for example, the disease is the effect of marsh-miasmata, in
vain shall we resort to the most powerful therapeutic means:
either they will fail, or they must be employed with an activity the
consequence of which must be injurious even when we procure
the cessation of the fever, that is to say, of the intermittent sym-
pathetic symptoms of a lesion which we shall render continued
by the employment of drugs. A change of residence, food,
employment, and journeys, cure more intermittent fevers than

medicine.   The same remark applies to lively emotions, and passions which give a centrifugal direction to vital action. When these measures are not sufficient, they contribute greatly to the efficacy of other therapeutic agents.

The morbid predisposition of the abdominal and pectoral viscera should be attentively considered in the treatment of intermittent fevers, with a view to the choice of decisive means or of preparatory measures, which may ensure the success of these means or prevent their occasioning any disagreeable accident. Whenever a subject predisposed to chronic irritations of the viscera, if either of these cavities be affected with intermittent fever after having removed the external causes which may have occasioned the disease, or which may keep it up, we must hasten its cure when it depends upon irritation of the digestive organs; for this irritation, by its repetition, ultimately gives rise to chronic irritation of the neighbouring organs.   Nevertheless, it is then useful to resort to the means which diminish the morbid predisposition of the latter.   The same course is to be pursued when an affection of the chest is to be apprehended: this, however, does not occur, except under the influence of external causes which cannot be removed, or when there has previously been an inflammation of the pleura, bronchia, or pulmonary parenchyma, capable of being exasperated under the sympathetic influence of a gastric irritation.*   With regard to subjects predisposed to encephalic irritations, mental diseases, their maladies are so dreadful, that, as we have already remarked, it is much better not to oppose the progress of the intermittent fever than to attempt its cure, although it may not be impossible ultimately to remedy the latter without recalling the former.

The treatment of intermittent fever having been hitherto purely empirical, we can be but little surprised, that employed as it frequently is, with too much energy without preparation, and even at an improper time, it has often been injurious even when it has arrested the fever.

The ancients, who were not acquainted with the Peruvian bark, treated intermittent in the same manner as continued fevers: a series of bleedings and evacuants constituted the treatment.   During the first days, severe abstinence was prescribed; friction was forcibly used over the surface; baths were employed,

* Histoire des Phlegmasies Chroniques.

and wine was then given in doses, progressively increased: at the instant the paroxysm was about to appear, they heated the surface by all possible means. In the case of a young lady, I succeeded in preventing a paroxysm by covering the body with very hot cloths, constantly renewed at the moment when she began to feel the rigor. This measure, which is too much neglected, hot baths and frictions would obviate the necessity of resorting to the employment of many of the other remedies if they were resorted to with energy on the approach of the paroxysms. Stoll ranks sudorifics, anodynes, the bath, confinement to the bed, exercise, sinapisms, and blisters among the means which may prevent the return of the paroxysm when they are employed a short time before its expected invasion.

When the employment of chymical compounds was introduced into the practice of medicine, they supplanted the wine used by the ancients, and in their turn yielded to bark.

When the bark was first introduced into Europe it found warm partisans, and antagonists not less ardent: the most remarkable among the first was Forti, and among the latter was Ramazzini. Both exercising the medical profession in the same country; one endeavoured to exalt the virtues, the other the dangers of this medicine. Ramazzini had at first highly extolled this medicine, and it was only after a long experience that he recognised its injurious effects; he did not entirely proscribe it, but only limited the cases in which it was an appropriate remedy. Forti recommended it in all cases without exception, and his opinion has predominated to the present day. Since his time, the use of bark has extended not only from pernicious fevers to benign, but likewise to continued fevers. If it be beyond dispute that this medicine renders invaluable services in intermittent fevers, (and its services are here as evident as its victims in continued fevers have been numerous;) it is not less true that the blindest empiricism alone can prescribe it in all intermittent fevers.

On account of the high price of the cinchona, its scarcity under some circumstances, and the great disgust it occasions some patients, an attempt has been made to discover therapeutic agents which might be substituted for it. Such agents have been discovered, but none of them has been employed so frequently as this article in intermittent fevers; so that it is still considered as the remedy upon which we must principally depend: it is greatly

preferred in most cases, although other means have succeeded equally well; less frequently, to be sure, because they have been less frequently employed.

These preliminaries being indispensable to avoid repetitions, let us now inquire what have been the principal methods employed to the present day in the treatment of intermittent fevers, and especially in that of benign intermittents.

Frank traces in the following manner the treatment of benign intermittent fever with complication, that is to say, that which is neither gastric, inflammatory, pernicious nor masked. After two or three paroxysms have revealed the nature of the disease, and when its appearance has not been coincident with the cure of another disease, he prescribes cinchona in substance or alone. "Sometimes," he adds, "on account of the idiosyncrasy of the patient, the sensibility and irritability of the stomach and intestines, the bark irritates the stomach and occasions oppression, it is rejected by vomiting, or passes off rapidly by stool." In the first case, he recommends an agreeable aromatic, and in the second, opium either before the febrifuge or together with it. Although the cold and hot infusion of bark, the decoction, the gummy or resinous extracts, and even lavements, and the external application of this substance have often cured the intermittent fever, the bark in substance is preferable. It should be administered in the apyrexia at least an hour after the termination of the last paroxysm, and two hours before the commencement of the succeeding one. If it be administered within the two hours preceding the paroxysm, the patients are often affected with a high degree of sensibility; they experience nausea, the greatest repugnance to the medicine, and reject it. Two drams are generally sufficient—but it is sometimes necessary to give three, four, and even six, either in a single dose or directed according to the length of the apyrexia—with an interval of half an hour between the doses, which are to be apportioned in such a manner that the smallest be given last.

The first paroxysm which succeeds the administration of the bark, frequently presents no diminution; it is frequently even more violent than the preceding: a circumstance which should not prevent a perseverance in the employment of the medicine. It is generally necessary to administer three ounces in the whole course of the treatment. The doses should be the more consi-

derable in proportion as the paroxysms are less marked, until they have altogether ceased: afterwards the medicine is still to be continued, but in more feeble doses, at greater intervals.

Frank asserts that the bark alone does not always succeed, that it fails in some individuals, and that the fever yields more readily to this medicine in combination with opium, or to opium alone, ipecacuanha or tartar emetic given in small doses, to the use of some article of food which is longed for, no matter how singular the choice may be, to a change of air; and, finally, to amulets.

The resistance of the fever to the action of bark, often depends, according to this author, on the fact that it is not legitimate: by this he means that there exists an unknown complication, such as *internal collections of latent saburræ*, a tendency to *plethora*, or an *obstruction*, a *scirrhus* of some of the viscera, especially of the liver or spleen, a *specific vice*, the *suppression of a flux*, which, he adds, require a specific treatment, sometimes admitting of none, and becoming exasperated by the inconsiderate use of the bark.

These principles were a few years since those of the most skilful practitioners; they are still, if we reject the obsolete theory in the terms of which they are stated, the positive result of facts. As it has already been remarked the observations of simple intermittent fevers are all incomplete, either because the author who reports them has omitted the signs of irritation of the stomach, of the chest and encephalon, or because he has not recognised them, or finally, because he has touched but slightly upon them, because he was not aware of their importance. There is not perhaps a single case of intermittent fever, which admits of the employment of bark alone. Had Frank and the physicians who entertain his opinions, been acquainted with the signs of gastric irritation, they would have known that the continuance of this irritation explains the cases in which bark does not cure intermittent fever much more satisfactorily than the *idiosyncrasy* of the patient, *saburræ*, obstructions, *specific vices*, the *suppression of a flux*. It cannot be said that these physicians recognised the existence of gastro-enteritis, because they speak of the sensibility and irritability of the stomach and intestines: this sensibility and irritability was only in their view an individual peculiarity, and not the proximate cause of the febrile phenome-

na.   As to plethora, they are deserving of credit for having
recognised the obstruction it presented to the cure by bark.   It
is well known at the present day, that this condition of the sys-
tem disposes the heart to irritation, is singularly favourable to
the continuance of gastro-enteritis, or renders the stomach more
susceptible of inflammation under the use of bark when the
febrile irritation resides in a different part of the system.

Instead of following Frank in his exposition of the treatment
of complicated intermittent fever, we shall examine the measures
recommended by Stoll and Cullen during the paroxysm of in-
termittent fever in general, of inflammatory intermittent in par-
ticular.   We shall then give the opinion of Pinel with regard to
the treatment of mucous and gastric intermittents.

"During the cold stage," says Stoll, "we must administer a mild
and warm diaphoretic drink: it must be frequently given and in
small quantities: by this means, aided by the warmth of the bed
and by abstinence for some hours before the attack, we may pre-
vent a troublesome vomiting during the attack."

In the hot stage, repose, lighter covering and lemonade are
suitable; and if the fever is excessive, the subject plethoric and
disposed to apoplexy, blood-letting should be cautiously prac-
tised.

The sweating stage having commenced, it should be gently
kept up by confinement to bed, by warm drinks, the infusion
of elder blossoms, wine whey; it must not be provoked by pow-
erful means.   After the sweating stage, repose, sleep and nou-
rishment are proper.

If it be added that the application of leeches to the epigastrium
or temples, is often preferable to venesection, that the whey
should be excluded, and that nourishment should not be hastily
given, these general precepts are still the only ones which
should regulate our conduct during the paroxysm of intermit-
tent fever.

Since Pinel does not admit inflammatory intermittents, we
must consult Stoll for the proper mode of treating these dis-
eases.   "The antiphlogistic method," says Stoll, "is proper
in the intermittents of spring in those of plethoric and athletic
individuals, and when excess of health is the cause of the fever,
in those of individuals disposed to inflammations and apoplexy,
those who are in a *slight state* of peripneumony or of pleurisy, or

in those who spit blood; in a fever which, owing to the nature of the epidemic, very easily degenerates into continued inflammatory fever, when the paroxysms are prolonged and the apyrexy is not complete, when there is violent and inflammatory headache, and furious delirium."

This able practitioner, then, recognised the necessity of employing the antiphlogistic method against intermittent gastroenteritis; pleurisy, peripneumony and encephalitis, or the intermittent sympathies of spring, which he had the penetration to discover through all the darkness in which the theories of his time involved the subject. But as it is the privilege of no one to throw off entirely the prejudices of the age in which he lived, he permitted the exhibition of the neutral salts; eccoprotics, in conjunction with venesection. These medicines, even when administered with the greatest reserve, could not be altogether free from inconvenience, except when the irritation was seated in the encephalon: they certainly kept it up when it resided in the stomach and intestines.

Cullen established three general indications in intermittent fever: 1st, during the intermission to prevent the return of the paroxysm; 2d. during the paroxysm, to employ such measures as may procure a perfect crisis of the disease; 3d. to obviate certain circumstances which might prevent the fulfilment of the two first indications.

The first indication was answered, 1st, by stimulants given internally without exciting sweat, or given in such a manner as to excite sweat and keep it up for some time after the period of the paroxysm has passed by, doses of tartar emetic only capable of exciting nausea, and administered an hour before the time of accession; 2d. by astringents alone, bitters alone, astringents and bitters united, astringents and aromatics united, the metallic tonics, the narcotics or a lively impression of fear. At the same time he recommended exercise and as much food as the appetite and digestion permitted.

The cinchona may be given without danger, at all periods of intermittent fever, *provided the inflammatory diathesis does not predominate in the system, and there be no considerable or fixed congestion in the abdominal viscera:* the proper time for its exhibition, is the intermission: it should not be administered during the paroxysm: it must be given as near to the access as the state of

the stomach will permit; it is not sufficient to prevent once by its employment the return of the paroxysm; the use of it must be continued at proper intervals.

To fulfil the second indication, he gave, 1st, Emetics during the cold stage, or at the commencement of the hot stage; 2nd, Narcotics during the hot stage.

When the inflammatory diathesis prevailed in the system, and there were fixed congestions in the viscera of the abdomen, he dissipated the first by blood-letting, and the antiphlogistic regimen; and the second, by emetics and purgatives. This method was, certainly, not always successful; for he adds, "When these means do not succeed in a short time, I think it is a more certain method to attempt the cure by stimulants which are non-sudorific, by tartar emetic in nauseating doses, than by astringents, bitters, aromatics, tonics, and narcotics, &c. [*]

It thus appears, that Cullen was well aware of the frequency of inflammation, at least in intermittent fever, and of the impropriety of administering tonics under these circumstances, and that he then attempted the cure of the fever by a revulsive, or anti-gastric mode of treatment: but he was ignorant of the true nature of the pretended embarrassments, the congestions of the digestive passages, and he employed nauseating doses of tartar emetic, where, at the present day, leeches are applied with success to the epigastrium, the hypochondrium, and anus. It was, however, far from being the fact, that the treatment of these fevers reduced itself to the empirical administration of cinchona.

Sydenham, Pringle, Huxham, Grant, and many other practitioners, had recommended blood-letting in the vernal intermittents. It was reserved for our age to witness the proscription of so powerful a means of treatment, in this disease. But it must be remarked, to the credit of our medical brethren, that, notwithstanding the anathemas which have been directed against this operation, they continue to employ it with advantage.

I have seen M. Broussais, in vernal intermittents, prescribe venesection, or the application of leeches to the epigastrium, according as there appeared to be excessive sur-activity of the heart, or only gastritis, and afterwards, administer the quinine from the first accession of the disease: this method succeeded

* Med. Prat. Paris, 1785, 1, p. 175.

perfectly, and I have since derived the same advantage from its employment.

Blood-letting, and the application of leeches in many cases, suffice for the cure of intermittents.

On the 12th of July, 1825, M. Piollet was called to see M. N***, who, in ascending the Rhone in a boat, fell into a deep and rapid place in that river; through fear, and the impression of the water, he became senseless; when consciousness was restored, he was seized with a chill which lasted an hour, and was succeeded by a fever which lasted six hours; the paroxysm terminated with an abundant sweat: during the hot stage, he had vomited several times with very acute pains at the epigastrium, which decreased during the sweating stage.   He passed the following day in this state of continual malaise, with frequent nausea, and a constant pain at the epigastrium.   The next day he was seized with a paroxysm in all respects similar to the first, with vomiting and extreme anxiety.   The patient stated, that in the month of May, he had a tertian fever, for which he had used different remedies, and among others, bark, which had arrested the disease, leaving, however, a slight pain in the stomach. This pain was more sensibly felt on the days corresponding with the paroxysms.   He experienced a relapse on the 18th of June, owing to exposure to rain.   The disease being rigorously combated by tartar emetic and bark, administered at improper periods, disappeared after the fourth paroxysm, leaving after it a very acute pain of the stomach, which increased when he drank wine or liquors.   The sense of heat, dryness, and impaired health was more considerable on the day of the paroxysm since the relapse.   The patient was in this condition when the accident occurred.   I was called in on the third day after the accident.   On the moment of the accession, and during the hot stage, I endeavoured to allay the vomiting with cold lemonade, lavements, and emollient fomentations to the abdomen, repeated every hour.   The papillæ of the tongue were prominent, the stomach painful on pressure, and there was continual nausea.

Being informed of the previous state of the patient, I thought it proper to combat the inflammation in the first place, and afterwards to employ the salt of quinine, or any other remedy that might appear proper, with the view to arrest the fever, after the disappearance of the gastritis.   Twenty leeches were applied to

the epigastrium; on the following day I prescribed a bath, after-
wards leeches, fomentations, three lavements, with the water of
mallows, and a rigid diet.   The patient being much better in
the evening, I ordered twenty leeches to be again applied, and
the fomentations to be continued after their removal.   This was
in the country: the leeches could not be immediately procured,
and since I could not be consulted, the patient had them applied
on the following day, at six o'clock; the usual hour of the parox-
ysm was nine o'clock.   I confess I would not have permitted
the application of leeches on this day; having observed the
worst effect to follow venesection, practised an hour before the
paroxysm of a tertian fever.   Returning in the middle of the
day, I was much surprised to find the patient better, and with-
out fever; I followed up this mode of treatment, which had been
fortuitously commenced, applied six scarified cups to the chest,
and, contrary to all rule, prescribed lavements, the bath, and af-
ter the bath, fomentations, to be renewed every hour.   The pa-
roxysm did not return, and the pains in the stomach diminished
so much, that the patient felt better than he had done since the
commencement of his disease.   This treatment was continued
for eight days; during this time, forty leeches and numerous
scarified and dry cups were applied.   I afterwards advised a
blister to the epigastrium, but the patient finding himself suffi-
ciently restored, was unwilling to submit. A few days after, he
left the place, the only remains of his disease being a state of
weakness and leanness, which disappeared during a residence
of two months in Piedmont, during which he was on a mild
regimen.   "It is evident from this observation," adds M. Piol-
let, "1st, That before the administration of the bark, we must
pay attention to the state of the stomach; 2ndly, That even during
the existence of gastric irritation, this remedy arrests the fever,
at the same time that it aggravates the local lesion; 3dly, That
a gastritis may renew the tertian fever, after it has once disap-
peared; 4thly, That by directing our measures against this gas-
tritis we may dissipate the fever.

In Corsica, M. Duplan administered the sulphate of quinine
in lavements, with constant success, in the intermittent fever oc-
casioned by the wind of Africa, after passing over the marshy
plains of Almeria.   But the employment of this salt must be
preceded by general and local blood-letting, directing the latter

according to the seat of the inflammation, which determines the febrile reaction; this is easily determined by the sympathies which manifest themselves during the hot stage.   It is at this period, likewise, that the abstraction of blood should be practised; sometimes, however, M. Duplan applied leeches one or two hours before the cold stage; and in this manner he cured some fevers without having recourse to the sulphate of quinine: in this manner, too, the cure has been more promptly effected, and relapses have been less frequent.   A soldier, who suffered from tertian fever, the paroxysms of which lasted about twenty hours, was treated in this manner, and cured.   The inflammation affected simultaneously the mucous membrane of the stomach, and bronchia.   Two large applications of leeches to the abdomen mitigated the paroxysms, which at last yielded to the abstraction of eight ounces of blood from the arm, during the hot stage.   Three men, who suffered from an intermittent of old standing, and who had made use of the sulphate of quinine, presented the phenomenon of infiltration, although nothing of this kind was observed by M. Duplan, in those who had been treated by local sanguine emissions, aided only by emollient regimen. [*]

At Calvi, in the same island, M. Gassaud has proved that intermittent fever can be cured by sanguine emissions alone, or judiciously combined with revulsives, and he hence concludes, that the cinchona and its preparations are not specifics. [†]

At Rochelle, M. Gasté has repeatedly cured intermittent fever, without the employment of any other means than the antiphlogistic treatment, indicated by pulmonary phlegmasiæ. [‡]

When intermittent fevers persist after sanguine emissions, we need not be so cautious in the employment of quinine; the bad effects which may follow the unseasonable employment of this remedy, are the less to be feared in proportion as the apyrexia becomes more complete, the stomach free from irritation during the apyrexia, and the disposition to irritation observed by the abstraction of a certain quantity of blood.   This method is peculiarly efficacious when a thoracic or encephalic irritation is the only, or the principal source of the disease.

[*] *Annals de la Medicine Physiologique*, Aout, 1830.
[†] *Bibliotheque Medicale.* December, 1827.
[‡] *Journal Universel des Sciences Medicales*, n. 149.

Pinel recommends a drink, holding tartar emetic in solution, and the use of diluents during the first five or six paroxysms of gastric or bilious intermittent fever; to be followed by a little infusion, and he is said to have cured most of these diseases towards the eighth or tenth paroxysm. He very properly combats the opinion that bark is a specific in intermittent fever; he, however, permits it to be given as a tonic, either alone or in union with opium; when the patient being *very irritable*, according to him, suffers from nausea or diarrhœa; with the nitrate or supertartrate of potash, in vigorous constitutions; with the muriate of ammonia, when there is an atonic state; finally, with a purgative after the paroxysm, when we wish to empty the primæ viæ. But he at least acknowledged, that it should not be employed when it produced colic pains, extreme malaise, and when it caused a kind of livid colour of the face, or, finally, when a painful swelling of the liver or spleen manifested itself.

The remarks made in the third chapter of this work, with regard to gastric embarrassment, and continued gastric fever, renders it unnecessary to discuss the propriety of evacuants in intermittent gastric fever. The same principles are applicable in both cases. It has, however, been remarked, that in intermittent fever relapses are common under the employment of purgatives, a fact that should discourage their use. Although it is remarked, that relapses are less frequent, when the cinchona is given in union with purgatives, there is never a sufficient reason to risk a return of the disease: diet and acidulated drinks are all the means requisite to restore the appetite. I shall only add, that if emetics and purgatives sometimes cure intermittent fevers, it is because they are given in the apyrexia, and this explains why they are in general less injurious in these fevers, than in continued fevers.

Previously to the employment of bark in gastric intermittent fever, leeches should in every case be applied to the epigastrium, because there is always irritation of the stomach or duodenum, or of both these viscera. The region of the transverse and descending colon should be carefully examined, with the view of ascertaining whether it participates in the morbid condition of the stomach; it is particularly necessary to take this precaution when there is no symptom of irritation of the stomach or duodenum. If it be thought that there is inflammation of the colon,

which is indicated by pain in the course of this intestine, and by diarrhœa, leeches should be applied in great numbers to the anus. Some facts induce me to believe, as I have already remarked, that inflammation of the colon is sometimes sufficient to determine intermittent fever. Should this prove to be the fact more frequently than I am at present aware of, it would account for the cases in which purgatives cause a relapse of the disease, while emetics cure. M. Roche has five or six times seen cases of intermittent colitis, accompanied with diarrhœa, likewise intermittent. The facts which I have mentioned, lead me to believe that this colitis may exist without diarrhœa, or that inflammation of the small intestines without gastritis, may personate colitis, and occasion a painful sensation of a bar extending from flank to flank.

When the irritation of the digestive passages has been suitably combated by the application of leeches rather than by venesection; when, during the apyrexia, the tongue is perfectly clean and free from redness of its borders or point, the bark is to be administered in substance in doses which are not very considerable; for example, one or two drams. If, in the following apyrexia, the tongue resumes its natural condition, we may continue its employment without danger, or even increase the dose until the paroxysms cease, or the gastric irritation tends to become continued. In the latter case, we must suspend the employment of the medicine and sometimes even return to the topical abstraction of blood.

It is in this manner, by a course dictated, not by the chimerical idea of intestinal saburra, but by the state of the organ to which we address the medicine which is to complete the cure, that we avoid the obstruction of the liver and spleen and the prolongation of the fever, accidents which even to the present day have remained unaccountable, or which have been vaguely attributed to the action of the bark, although they should be attributed solely to the imperfection of the medical art.

The treatment of intermittent mucous fevers differs little from that of gastric or bilious intermittent, with this exception, that in the former, the irritation being generally less intense, and the subjects being more weak and less irritable, bitters and quinine may be administered sooner and in larger doses than in the latter, with less fear of causing the disease to assume the continued

type, or of occasioning in the viscera annexed to the digestive
canal, a dangerous sympathetic irritation.   It is, however, espe-
cially after numerous paroxysms of intermittent mucous fever,
that the viscera are observed to become affected, because the sub-
jects in whom this fever is generally observed, although but lit-
tle predisposed to acute inflammations, have a great tendency to
contract the organic alterations which are the effect of an obscure
and prolonged irritation.   But if we reflect that intermittent ir-
ritation of the digestive passages is a powerful cause of irritation
of the liver, the spleen, and mesentery, we shall recognise the
necessity of not delaying too long the exhibition of the bark.

When the bark does not from the first, arrest the paroxysms
of mucous intermittent fever, and especially when it aggravates
them, we should still more than in gastric intermittents, appre-
hend, not the approach of a fatal termination, but the develop-
ment of a chronic and latent inflammation of one of the abdo-
minal viscera.   Whenever the bark seems to be rather injurious
than beneficial, it is prudent to temporise until spring, the period
at which mucous intermittents and almost all autumnal intermit-
tents, usually cease.

But, it is in vain to expect a radical cure from any mode of
treatment whatever, as long as the subject remains in a damp at-
mosphere impregnated with marsh-miasmata, the ordinary cause
of these fevers.   The same remark applies to gastric intermit-
tents when they are attributable to the same cause.

What shall we say of *adynamic* intermittent fever, since its
existence is hardly admitted by the nosologist who has establish-
ed the class of adynamic fevers?   There is but little wisdom in
laying down *a priori* rules of treatment in diseases which per-
haps do not exist.   Should the physician, however, encounter
such diseases in his practice, he should, in my opinion, treat them
as gastro-enteritis of great intensity; since adynamic fever, pro-
perly so called, that is to say, the putrid fever of the ancients,
is evidently owing to inflammation.   It is proper to remark that
in the very limited number of adynamic intermittent fevers
which have hitherto been observed, the bark has not appeared
more efficacious, or rather it has not appeared less injurious than
in continued adynamic fever.   These fevers appeared rather re-
mittent than intermittent.

The cinchona is not the only remedial agent which we may em-

ploy in the treatment of intermittent fever. I have already remarked, that many other remedies have been employed with success.

At the head of the substances which have been proposed, as substitutes for the bark, stand the arsenical preparations. Authentic observations collected by physicians of known honesty and information demonstrate the efficacy of these preparations, not only in benign but also in pernicious intermittents. In my opinion, the physician should never employ poisonous substances unless the indications of cure cannot be answered by any other means. In speaking of the efficacy of arsenic, I do not wish to recommend it, but only to demonstrate that it partakes of the pretended specific properties of the bark.

I am far from wishing to proscribe the employment, so frequently useful, of the indigenous bitters; but of all the means employed with a view to cure intermittent fevers, the bark is the one, the manner of administering which is least known; it is the most powerful of the remedies not derived from the class of poisons. It should be preferred to other bitters, because it combines many valuable properties, being both bitter and aromatic in a very high degree, and because the dose and action of this substance can be graduated with the greatest facility and certainty.

The effects of the alkalies obtained from the cinchona, and of the salts which they form, not being as yet perfectly confirmed by experience, I think they should only be employed in the following cases:

1st, When the patient refuses to take the bark in substance.

2dly, When the bark in substance is rejected by vomiting.

3dly, When we have reason to think that it will be rejected, if administered in this manner.

4thly, When the bark is ineffectual.

5thly, When it cannot be procured of good quality.

Such were the opinions, too timid, perhaps, but at least prudent, which I advanced in the first and second editions of this work. Experience has since convinced me that the sulphate of quinine may always be substituted for the bark, and that it possesses advantages which render it preferable in all cases. The dose should be from four to ten or twelve grains; seldom more. This salt acts precisely in the same manner as the bark, but it has not the inconvenience of bulk and of occasioning disgust; in too large a

dose it irritates or inflames the stomach in the same manner as
the bark.

The action of bark in intermittent fever, has been the subject
of multiplied disquisitions; at the present time the theories on
this subject may be reduced to three.—Some assert that it acts
as a specific: I confess I can understand absolutely nothing from
such an assertion, and I abandon to more able hands the elucida-
tion, the discussion, and especially the demonstration of its spe-
cific character.   Others think that it cures intermittent fevers by
augmenting the vital forces: I do not believe that the vital forces
are susceptible of an absolute augmentation: is it a local augmen-
tation of the organic movement that is meant? Is it meant that
it strengthens the stomach? This opinion is equivalent to that of
those physicians who think with reason that it cures intermit-
tent fever by stimulating the digestive mucous membrane, as it
stimulates it in all the other cases in which it is administered.

It being determined that bark cures intermittent fever by sti-
mulating the stomach, some have thought it a legitimate conclu-
sion that the intermittent fever is not a gastritis; for, say they,
how can an irritant cure an irritation? M. Broussais asserts that
it is by opposing irritation to irritation: this is equivalent to not
answering the question at all.

We have now arrived at the point of the new theory which is
most litigated; I must therefore be permitted to dwell upon the
subject, as much as its importance demands.

Let it be granted in the first place, that two facts, which have
been demonstrated, do not cease to be true, even when we are
ignorant of the manner in which one follows the other, and that
the want of a good explanation of the connexion which subsists
between them, and even the apparent contradiction, which may
result from the want of explanation, does not authorize us to
deny their existence.   This principle being laid down, I might,
in strictness, only add—gastric intermittent fever is evidently an
irritation of the digestive passages; the bark augments vital ac-
tion in the tissues with which it is placed in contact: this fever
very frequently ceases after the administration of this remedy;
it is not incumbent upon me to endeavour to reconcile this con-
tradiction, which must be only an apparent one, for in nature there
is no contradiction. The physicians who pretend that the inter-
mittent fever is cured by the specific action of bark, elude the diffi-

culty which they oppose to us; they deny the stimulant action of bark when they are defending their own theory, while, with the view of opposing ours, they assert this action. I think that without creating any hypothesis, or resorting to any subtilty, we can explain the action of bark even in gastric intermittents as well as the action of any other therapeutic agent, in other diseases: We shall only generalize facts.

In the case in which it succeeds best, bark is applied to the stomach during the apyrexia, consequently when the stomach is not irritated: first fact.

The bark does not succeed, or it acts but imperfectly when it is given, while the stomach is still irritated: second fact.

Bark aggravates the state of the patient when it is given too near the invasion of the paroxysm; still more when it is given during the paroxysm; in the former case the stomach is already greatly irritated; in the latter it is irritated in the highest degree: third fact.

From these three facts, I draw the conclusion, that bark cures gastric intermittent fevers, because it excites the stomach in the absence of the irritation, which manifests itself by the febrile paroxysms. This proposition is only the general expression of the three facts which have been indicated.

It remains to examine how the remedial excitation which the bark develops in the stomach, prevents the development of the morbid excitation, which having established itself in this organ, determines the febrile symptoms, and how it acts when the irritation of the digestive passages, which gives rise to the febrile paroxysms, continues during the apyrexia, and when it is administered during the paroxysm. I might answer that the bark acts by producing a specific irritation, or I might say, that this fact is not more extraordinary than the death of so many men, victims of this irritation, added to the permanent irritation of the stomach in continued fever. But,

1st, Continued inflammations are cured by the direct application of stimulants to the part inflamed: in this manner ophthalmia is cured by alum, urethritis by the sulphate of zinc, erysipelas by a vesicatory.—If a continued irritation be cured by an irritant, why should not the same thing occur, and even more readily in case of an intermittent irritation, especially if the irritant be applied during the absence of the irritation?

2dly. An intense irritation provoked in an organic tissue prevents the development of one less intense, and renders it insensible to the impression of a less powerful irritant; the localizant action, (action localisante) of an astringent tonic may cause the cessation of the generalizant action, (action generalisante) of an expansive excitant. Thus, when the mucous membrane of the mouth has been rendered burning and painful by the action of pepper, the strongest brandy seems to be only a mild liquor, vinegar is scarcely perceived, and bitters appear to have no taste.

3dly. If it be true that continued fever is a preventive of intermittent fever, it is with reason that Pujol says that bark cures intermittent fever by creating a sort of continued fever.

4thly, When the stomach is not the seat of irritation, bark cures the intermittent fever as it cures a periodical ophthalmia, neuralgia, or any other external intermittent irritation.

5thly. Bark cures intermittent fever, either by establishing in the stomach an irritation which prevents the impression on this organ of the causes of the disease, when they operate through it, or by determining a derivative excitation in the stomach, when the morbific influence directs itself to some other organ.

6thly. If it be maintained that quinine acts as a specific against *periodicity, habitude, intermittence,* it must be granted that it shares this property with the passion of joy or terror, with arsenic, opium, hyosciamus, tartar emetic, and many other agents which cure periodical diseases.

Let us cease to search in facts for what can never be discovered in them: an agent produces a certain effect in certain tissues, and the result is the cure of a certain disease: this is the amount of our knowledge, not only with regard to bark, but also with regard to all therapeutic agents. Let us not seek in the action of medicines for arguments against the demonstrated nature of diseases.

Regimen is of great importance in intermittent fever; ignorance of the proper mode of directing this part of the treatment is the cause of the indefinite prolongation of the disease which is so frequent. In the apyrexia the subject should eat little, and only use such articles as do not tend to accelerate the circulation, by nourishing too highly, or by stimulating the stomach. The indication of stimulating the stomach should not be answered except by bitters, the martial preparations, or bark; because

these are the only agents which exercise a tonic action without accelerating the contractions of the heart.

If during the apyrexia the tongue is red on its borders, and the epigastrium painful, the nourishment which is necessary when the disease prolongs itself, must keep up the irritation of the stomach, and neutralize the good effects which the sudden and intense action of quinine produces in all other cases. Since it is impossible to confine the patient for a considerable time to a very rigid diet, we must at least endeavour to render the gastro-enteritis completely intermittent by the topical abstraction of blood, a measure which requires the most complete abstinence during the whole time of its employment.

The patient should eat very little, or even abstain entirely during the morning of the paroxysm. If the paroxysm occurs at an early hour, the most complete abstinence is indicated. A few moments before the accession, it is proper to administer, according to the advice of Stoll, a hot drink slightly aromatic, and to employ the preservative means which have been mentioned: the vapour-bath would, no doubt, be of great advantage, under these circumstances.

The effect of diet is much aided by the employment of aqueous drinks, taken very hot, and topical depletion. These means united suffice more frequently than it is generally believed for the cure of intermittent fever. Let the world enjoy the wit of Le Sage at the expense of Doctor Sangrado; let us not fear the application of this title: our success will indemnify us for the ignorant malice of the public, the malevolence of some of our medical brethren, and the interested sarcasm of the apothecary.

I have said that the morbid organic state which constitutes intermittent fever ceases during the intermission; this, however, is only true in general; sometimes it only diminishes, and descends to a degree, at which it does not call the sympathies into play; this happens particularly in chronic gastric intermittent fever. In many cases of recent intermittent, the intermission is far from being exempt from all morbid phenomena. These fevers resist the bark, which is then often abundantly administered without any effect. It is in these cases that bark occasions obstructions; it is in these fevers, especially, that regimen and the antiphlogistic method properly conducted, exercise, the fresh air, and baths are useful.

A measure which is little known, formerly recommended by

Silvius, and employed with success by M. Lallemand, is the employment of ligatures applied tightly round the limbs. It is much to be desired that we were in possession of a greater number of facts in relation to this subject.

I believe I have shown that intermittents, particularly those of benign character, naturally find their place in the new theory, particularly if we do not consider these diseases as so many gastro-enterites. This theory, as I have explained it, should, I think, methodize the treatment of benign intermittent fever, and we shall soon see that it may lead to the successful treatment of pernicious intermittents. The treatment of these diseases has been abandoned to empiricism, only because the ancient theory was based upon hypothesis instead of facts, and was of no practical utility.

The strong hold of the adversaries of the new doctrine is the theory of intermittent fever. They think that they have accomplished every thing when they have said, Bark cures these fevers; they are therefore not inflammations. If bark always cured, if it were never injurious, this determined opposition would be of little consequence. But this is not the case; it often fails, at least in those cases in which intermittents constantly prevail. It sometimes does injury, or our masters had less wisdom and ability than certain practitioners of the present day, who always cut short the fever with the sulphate of quinine. It is therefore necessary to investigate the nature and seat of intermittent fever; for the better we are acquainted with an effect, with the more ease and certainty should we be able to obviate it. We do not pretend to impose our doctrine upon others, but we shall continue to consider it as good, if not perfect, until a better one is discovered; and we do this the more boldly, since, notwithstanding all that has been said by persons who do not read at all, or who read with prejudice, or who do not comprehend what they read, this doctrine excludes no fact, and accords completely with experience.

Physicians inhabiting countries in which intermittents prevail are very culpably indifferent: they alone have been called upon to pronounce with regard to the nature and seat of these diseases: hardly any among them have answered the appeal which was made to them in the first edition of this work. Most of them adhere to the old therapeutic routine, or they have modified their opinions to a certain extent without any improvement in their

practical views. Let them at length shake off this pernicious apathy, and imitate MM. Bally, Duplan, Gassand and Gasté.

Macintosh does not think that blood-letting, practised during the cold stage necessarily occasions death, notwithstanding the opinion of many respectable authors. According to him, the intermittent sometimes yields to this mode of treatment, the action of which breaks the succession of morbid phenomena, and renders the following paroxysms successively less violent. Blood-letting, in every case in which he practised it during the cold stage, cut short this period, and prevented the hot and sweating stages, which were entirely wanting. This means appeared to him to act by preventing the natural efforts of the economy, by opposing the congestion which takes place in the viscera, and by restoring the equilibrium of the circulatory system. "We may," he remarks, expect to derive advantage from this measure in the treatment of the grave intermittents of autumn, and more particularly in the pernicious and malignant intermittents of Italy, Holland, and other marshy countries. Blood-letting may be employed with safety in every country when the cold stage continues for a long time, and presents some danger. This operation is always more useful in the cold than in the hot stage, or in the intermission. It never prevents the paroxysm when practised during the intermission." Finally, M. Macintosh goes so far as to propose blood-letting in the first period of all fevers. He had himself bled with success in the cold stage of an intermittent contracted in a marshy country, and which had resisted the quinine and other remedies. Before he had lost two ounces of blood from the arm, the rigor ceased, as well as all the other symptoms of malaise which accompanied it, and neither the hot nor sweating stage succeeded. The painful sensation of cold was succeeded by an agreeable warmth, and the strength, instead of diminishing, was restored. The same means succeeded in numerous cases. The number of facts in support of this practice are not yet considerable.* We would not deny the authority of facts; nevertheless, the employment of blood-letting in the cold stage appears to us hazardous in pernicious fever, and we do not think the measure should be resorted to except in benign intermittents, and even in them with prudence, and only in very vigorous subjects.

* Journal des Progres, tome iii. 1827.

CHAPTER XII.

Of Pernicious Intermittent Fevers.

PINEL had only indicated the place which pernicious fevers should occupy in his nosological classification, when Alibert published a treatise on these diseases, in which he not only presented a summary of the observations collected by Mercado, Morton, Torti, Lautter, Lancisi, Comparetti, but likewise described many new varieties of these fevers.* His work shall serve me as a guide in the exposition of the phenomena of these diseases, as well as of the treatment recommended and employed with frequent success by the most skilful practitioners.

Intermittent fevers do not always continue with as little intensity as those which have been mentioned in the preceding chapter under the denomination of mucous, gastric and inflammatory intermittents. Under certain circumstances, we observe a change in the character of the disease, at the second, third or fourth paroxysm. The rigor becomes shorter and very intense, or it becomes very long: instead of the phenomena of the hot stage, we sometimes observe grave symptoms, which have not hitherto manifested themselves; at other times, one or more of those which already appeared become remarkably exasperated; the sympathetic phenomena which particularly characterize the febrile paroxysm become less apparent, or they even disappear. The local symptoms of irritation, until now frequently unperceived, become so prominent that they cannot be mistaken, and we observe all the phenomena of a formidable acute disease. Yet the paroxysm terminates by a sweat of little importance, the pa-

* Traité des Fievres Pernicieuses Intermittentes, 5th edition, Paris, 1820, 8vo.

tient partially recovers his strength and appetite, and sometimes does not complain of any malaise. A new paroxysm occurs, and if the fatal termination does not take place in this paroxysm, it seldom fails to supervene in the succeeding one, though sometimes in the fourth or fifth paroxysm, without counting those in which no unfavourable symptoms manifested themselves. Such is the course of the phenomena of pernicious intermittent fever, when the proper treatment is not employed, or when it is ineffectual.

It appears from facts, collected by able observers, that we should recognise a great number of varieties of pernicious intermittent fever, distinguished by their most prominent symptoms, and the organs in which these symptoms manifest themselves, and that we may distribute them under different heads, according as the symptoms denote an affection of the digestive passages, of the encephalon, of the lungs or pleura, of the heart, the uterus, the kidneys, the bladder, the extremities, or the skin: whence result the following varieties of pernicious intermittent fevers: 1st, The cardialgic, atra-bilious or hepatic, coleric, colic; 2nd. Cephalalgic, soporose, delirious, convulsive, epileptic, hydrophobic, aphonic, paralytic; amaurotic; 3d. Peripneumonic, pleuritic, catarrhal and dyspnœic; 4th. Syncopal, and carditic; 5th. Uterine; 6th. Nephritic, and cystic; 7th. Rheumatic; 8th. Algid, diaphoretic, exanthematous, and icteric.

This division must not be considered as an attempt at classification; it is simply an arrangement of pernicious fevers, according to the organ in which the most prominent symptom manifests itself: we shall presently see that this arrangement is only provisional.

1st, The pernicious cardialgic fever, the most frequent of all, and one of the most formidable, perhaps even the most dangerous, is characterized by an acute pain in the epigastrium, which appears to correspond to the superior orifice of the stomach. There is a sense of biting, of insupportable laceration, often accompanied with nausea and even vomiting, sometimes with syncope. The pain may be so intense, as to draw cries from the patient; the face is pale, the features profoundly altered, the pulse small, unfrequent, scarcely perceptible, the muscular force prostrated, the vision sometimes obscure, and respiration often embarrassed. These symptoms manifest themselves after a rigor,

generally of short duration, or at the commencement of the hot stage. If we compare this state with acute, or chronic cardialgia, of a non-febrile character, and with certain continued gastric fevers, we shall be convinced that this variety of pernicious gastric fever is only an intermittent gastritis, of great intensity.

The atra-bilious or hepatic, has been observed only in a small number of persons of vigorous constitutions: it has appeared less grave than many others. It is announced by abundant and repeated alvine dejections, composed either of matters resembling the washings of flesh, or of blackish blood, either liquid or coagulated, in whole or in part; the weakness is extreme, the pulse feeble and small, the voice shrill or lost, the body is cold, especially the extremities, and the patient is threatened with syncope, whenever he attempts to rise. All these symptoms indicate a violent intermittent irritation of the intestines, with sanguine exhalation, more or less abundant. The time is gone, when the matters passed in this disease were considered as derived from the liver.

The symptoms of the *choleric* or *dysenteric*, are a vomiting of abundant bilious matters of a porraceous green colour, heat, and acute pain of the stomach, dryness of the tongue, hiccough, alteration of the voice, which becomes either shrill or hoarse, embarrassed respiration, smallness and feebleness of the pulse, lividity and coldness of the extremities. Notwithstanding all that has been said by Torti, we can only see in this affection an intermittent cholera; that is to say, a violent irritation of the stomach and intestines, occurring periodically, and accompanied with evacuations exceedingly abundant.

The *colic* observed by Morton, has for its pathognomonic sign, acute pains in the intestines, which consist sometimes in a very unpleasant sensation of twisting, or tension, or in a kind of tremor with small pulse, extreme anxiety, spasm, vomiting, cold sweat, thirst, dryness of the tongue. The last two symptoms do not always occur, a fact which I have had an opportunity of ascertaining with certainty.

These four pernicious fevers, present examples of the principal shades of intermittent gastro-intestinal irritation, carried to the highest degree of intensity, and exercising over the encephalon the most powerful influence. Collectively, they constitute the greatest number of pernicious fevers, a fact which con-

firms the remarks which have been made, with regard to the great frequency of gastric intermittent fevers in general. The local symptoms, which have but little prominence in benign intermittents, manifest themselves with such intensity in the pernicious gastro-intestinal intermittents, that the seat of the disease cannot be mistaken.

2nd. Authors who have observed the cephalalgic pernicious fever, assert, that to the symptoms of vascular reaction, are joined an acute pain of the head, particularly in the frontal region, sometimes a hemicrania, often pain in the orbits, troubled vision, an excessive irritability of the retina, tinnitus aurium, great sensibility to every kind of noise, vertigo, and insomnia. All these phenomena indicate an irritation of the arachnoid, of the most intense character, of which the encephalon partakes to a greater or a less degree; these facts admit of no doubt. It is to be regretted, that the state of the stomach and tongue has not been described with care, in this variety of pernicious fever. Very subject myself to intense, but transient irritations of the encephalon, I am convinced that their influence is almost always felt by the stomach; a single fact, however, is never conclusive. The suspension of business for a single day, is sufficient to restore the functions of my stomach, although my head continues painful, and I still suffer from vertigo; a proof that this cerebral irritation is primitive. Comparetti reports the history of a case of cephalalgic pernicious fever, accompanied with deafness, and a sense of beating in the ear, a painful sensation of constriction in the back of the neck, prostration, failing of all the senses, torpor of the intellectual faculties, incapacity to support the slightest noise, or light. The symptoms of this pernicious fever were certainly the effects of an encephalic irritation; for although the bark moderated the paroxysms, it did not produce a cure until after the discharge of a purulent matter from the auditory canal: a black spot indicated the caries of the osseous parietes of this canal.

Nothing resembles the pernicious fever more than the periodical attacks of violent cephalalgy, caused by a profound lesion of the encephalon, of which M. Itard has reported several examples.* This physician, who does not fear to advocate the

* Traité des Maladies de l'Oreille et de l'Audition. Paris, 1822.

new doctrines, confirmed by his experience, has published an interesting memoir, in which he establishes the following propositions, which he deduces from facts:

An acute or chronic inflammation of the meninges, or of the encephalon, may manifest itself only by intermittent symptoms.

The fever known by the name of ataxic intermittent is, in certain cases, the number of which will, doubtless, be found to be greater as observation becomes more extended, only a symptomatic fever excited by the phlegmasia of the brain.

The transition from intermittent to continued fever, in proportion as the disease becomes aggravated and approaches the fatal termination, is a proof that the type of the fever serves less to establish its character or nature than to indicate the degree of intensity of the phlegmasia which provokes it.*

The *apoplectic, carotic, lethargic, comatose,* or *soporose* pernicious fever, is one of the most frequent after the cardialgic: it is perhaps the most dangerous, and at the same time one of those which yield most readily to treatment.   Towards the termination of the rigor, or during the hot stage of benign intermittent, the patient falls into a state of somnolence, or even into a state of torpor more or less profound: the pulse is full and unfrequent, or small and slow, the eyes are suffused and fixed, the eyelids half closed and motionless; the face assumes a cadaverous aspect; if the patient be aroused, he utters a few words in a stammering manner, and hardly answers the questions which are put to him: regardless of what passes around him, he asks for something and instantly forgets it; he is aware of the incoherence of his ideas, endeavours to collect himself, but soon relapses into stupor.   When the paroxysm is very intense, the respiration is stertorous, all sensation seems extinct; and there is neither speech nor movement.   After one or two hours passed in this state, the patient recovers his consciousness until the next paroxysm occurs.   Each of these paroxysms then present, sometimes, the phenomena of continued apoplexy, and at other times those of the stupor, which characterizes typhus.—In both cases these phenomena are proofs of a strong concentration of vital action towards the encephalon, of a manifest or latent afflux of

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* Memoires sur quelques Phlegmasies Cérébrales, presentées comme cause de Fevres Intermittentes pernicieuses; inséré dans le Journ. Univer. des Sc. Med. xxxii. p. 366, 367.

blood to this organ; an afflux which, as Deveze has shown, is only the effect of an irritation of the cerebral substance.[*]   This afflux not being at first sufficiently violent to determine extravasation of blood in the brain, a state of calm is restored until a new attack at length exhausts the vital activity which belongs to this organ.

The state of the tongue and stomach, which doubtless participate, at least in most cases, in the irritation of the encephalon, has not been described in this fever.

The *delirious* pernicious intermittent is not characterized by disorder of the intellects alone: the thirst is ardent, the skin very hot, the pulse very weak, the sphincter of the bladder sometimes relaxed, the patient struggles to leave his bed.—In a case reported by Lautter, there were in addition, all the signs of an inflammation of the lungs.   In one of two cases observed by Lanoix, the face was red and animated, the tongue of a brownish red at its centre, and bordered with yellow.   Whenever the patient drank he vomited, with terrible efforts, bile of a porraceous green hue, and by his gestures indicated the pain which he felt at the epigastrium; respiration was embarrassed, the pulse small and profound, stupor terminated the paroxysm, which lasted eighteen hours.   During the apyrexia there was still nausea; the memory was slightly affected.   The paroxysms were renewed with increased intensity, and the sixth only ceased with the life of the patient.   In another case, pains of the head and dyspepsia announced the paroxysm, which commenced with a violent rigor which lasted forty-eight hours; delirium supervened with feebleness of the muscles, redness of the face, embarrassed respiration, intense thirst, nausea, anxiety, concentrated pulse.   There were but six paroxysms after the last, of which the patient recovered. We may conclude from these facts, that the delirious variety is seldom the effect of a simple cerebral irritation, and if we compare it with the analogous cases of ataxic continued fevers, we shall perceive that it is often a gastro-enteritis, with sympathetic irritation of the encephalon.   I am, however, far from denying the possibility of a fever of this character, derived solely from irritation of the brain, or rather of its meninges.   It should be remarked that the delirium has frequently been succeeded by

[*] Recherches sur la Sensibilité. Paris, 1786, in 8vo.

stupor: this fever was then both delirious and soporose. It is possible to establish a well marked line of demarkation between affections which differ only as it respects individual predisposition, the number of organs affected, and the intensity of their lesions.

The *convulsive* variety is more common among infants than among adults; it is recognised by irregular contractions of the muscles of the face, a forced rolling and contortion of the ball of the eye, the dilatation of one or both pupils, sometimes by trismus; the stupor alternates with these symptoms or succeeds them; respiration is much embarrassed and the pulse extremely small. This fever can scarcely be distinguished from the two preceding, and it furnishes a new argument for those who assert the inutility of multiplying species which differ so little from each other, that they are liable to be confounded. As in the preceding case, it is probable that the stomach is often irritated; but this could not be proved, because the signs of the irritation of this organ were not well known. The cerebral symptoms are here so prominent, that we cannot refuse to recognise in this shade of pernicious fever, a cerebral irritation, with or without gastro-enteritis, and accompanied with convulsive movements.

The *epileptic* variety has been described by Lautter, who observed it once in a little girl. In the first paroxysm, after a rigor and a sensation of cold of short duration, there supervened excessive heat, general convulsive movements, foaming at the mouth; the patient afterwards fell into a stupor. The return of the attacks at the same hour, indicated the type of this disease, which was cured, after three paroxysms, by an appropriate treatment. Lautter observed so little difference between the symptoms of this disease and those of epilepsy, that he thought the disease was the latter, until the regularity with which the paroxysms returned, was mentioned to him. This variety is evidently a cerebral irritation, which manifests itself by symptoms of regular periodical epilepsy.

The *hydrophobic* variety has been observed by Dumas. The case of which this author has given the history, was that of a robust man of a dry complexion, who, after having lain upon the damp ground, suffered from vertigo, intolerable headache, and general uneasiness; these symptoms were succeeded by a rigor, moderate heat, dejection and complete prostration. On the fol-

lowing day the pain of the head continued in an intolerable de-
gree; greenish matters were discharged by vomiting. On the
next day a new rigor in the evening, intense heat, very ardent
thirst, irritation of the pharynx, causing embarrassed deglutition;
slight delirium. On the succeeding day, no fever, prostration,
somnolence, pain in the muscles of the neck; in the evening,
pulse irregular, heat of the skin not preceded by rigor nor fol-
lowed by sweat. Finally, on the following day, violent heat,
furious delirium, convulsive movements of the lips and muscles
of the neck, considerable difficulty of deglutition—constriction
of the pharynx, augmenting on the approach of liquids; tongue
dry, black in its centre, of a bright red on its edges. On the
following day, a state of calm, but an aversion for liquids and
difficulty of deglutition. On the following day general convul-
sions, subsultus tendinum, violent constriction of the abdominal
muscles, great difficulty of deglutition, furious delirium, at-
tempts to bite, foaming at the mouth, grinding of the teeth, in-
vincible horror for all liquids, universal shivering on exposure
to the cool air. The patient was treated by bark, and was
cured after the eighth attack. His repugnance to liquids conti-
nued even during the apyrexia.

We cannot mistake, at the present day, the combined symp-
toms of gastritis and arachnitis in this pernicious fever. Dumas
has observed this interesting case with most laudable attention:
he has noted the redness of the edges of the tongue, which a less
attentive observer would not have mentioned; it is owing to the
prejudices and inadvertence of physicians, that a great number
of remarkable facts are given to the world in an imperfect man-
ner.

The *aphonic* variety of which M. Double has given us the
history, was not observed with less attention by this physician.
Great heat, total loss of voice, convulsive agitation of the muscles
of the face, a tongue as it were *burnt*, extreme thirst, a general
sense of uneasiness, of pain and of weight characterized the pa-
roxysms, which were few in number, and the disease terminated
happily with the aid of bark. After these symptoms, we cannot
doubt that the stomach and brain were greatly irritated. But
the fever was not only aphonic, it was likewise convulsive, and
the intermittent inflammation of the stomach was not for a sin-
gle instant equivocal.

The *paralytic* observed by Molitor and Jonquet,* the *amauro-tic* which has been observed by Vacca Berlinghieri, are only va-rieties of the pernicious fever, in which the brain is irritated ei-ther primitively or sympathetically: they are unfrequent, and yield as readily as the other varieties to the administration of bark.   Sometimes, on the contrary, amaurosis succeeds the em-ployment of bark and the cessation of the paroxysms: M. Cou-tanceau has observed a case of this kind, in which the impairment of sight was transient.

Cerebral irritation predominates in these nine varieties of per-nicious fever; by whatever symptoms announced, it is not equi-vocal: it is always of a threatening character, and calls for the at-tention of the physician.   This irritation is not always combined with an analogous state of the digestive passages.   To suppose that irritation is always a sympathetic symptom of gastro-enteri-tis in these fevers would be incorrect; it is facts of this kind which demonstrate that pernicious intermittent fever is not always a gas-

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* A gardener aged seventy years, of strong and robust appearance, was, af-ter a transport of rage, attacked with insensibility, and fell into a profound stupor; a surgeon immediately prescribed tartar emetic and irritating lave-ments.   After the operation of these remedies, he ordered blisters to the in-ternal and upper parts of both thighs, recollecting that the patient had for some time been without an herpetic disease, with which he had been affected for many years along the spinal column.   Doctor Richard found the patient in a soporose state, stammering whenever he was forcibly awakened; his mouth was greatly distended, his respiration appeared much embarrassed, his pulse though irregular was tense, his face was highly animated; venesection was practised, and a purgative lavement administered immediately after-wards.   On the following day, the surgeon finding the patient very well, or-dered a purge.   M. Richard found the patient in the state in which he had left him, with the addition of a hemiplegia of the right side, and convulsive movements of the parts around the mouth.   He was informed that the pa-tient had during the night suffered great distress and even cold, and that he had asked for more covering.   The urine was covered with a milky pellicle, and deposited a lateritious sediment; the prevailing diseases were almost en-tirely intermittent: he ordered a large blister to the back of the neck, and a sinapism to the sole of the feet; he gave at the same time by the spoonful a potion containing half a dram of camphor, and he prescribed for the time of intermission, an ounce of bark mixed with a dram of camphor.   On the third day after, the patient had no paroxysm, and the hemiplegia had entire-ly disappeared with the fever; the bark was continued for some days.   The patient, under this treatment, was soon restored to his usual health.

tro-enteritis any more than benign intermittent fever. Yet we
cannot too strongly advise all practitioners to neglect no oppor-
tunity of determining the state of the digestive organs in diseases
of so formidable a character.

3d. The symptoms of the pernicious *peripneumonic* or *pleu-
ritic* fever, described by Morton and Lautter, are a violent chill,
general cold and intense pain of the chest, augmenting in inspi-
ration, dyspnœa, extreme weakness; the pulse is at first small
and formicant, afterwards hard and frequent; there is generally
cough, the thirst is often excessive, and the tongue dry.   This
fever, which is not common, is only an intermittent inflamma-
tion of the pleura or lungs; and this is so true that on the first
paroxysm it is always mistaken for a continued peripneumony
or pleurisy; it is only when the symptoms are observed to cease,
the apyrexia to be established, and the symptoms to return again
that the disease changes its name.

Laennec observed an existence of pernicious peripneumonic
fever.   The subject was a man thirty-five years of age, robust
and muscular, he entered the hospital with a recent syphilis, the
treatment of which had been imperfect.   The sudorific ptisan
and mercurial frictions were ordered.   On the sixth day of his
admission he had a paroxysm of intermittent fever of conside-
rable violence, and he stated that he had had one on the evening
of the day but one previous.   A third paroxysm occurred on
the third day after; but it was entirely different from the pre-
ceding paroxysms.   It commenced with a more considerable ri-
gor, was accompanied with a violent headache, extreme dyspnœa,
and hemoptysis.   The chest having been explored about the
middle of the paroxysm, the respiratory murmur was found unal-
tered except at the root of the lungs, where it was masked by a
rale crepitant well characterized, principally on the right side.
Laennec, without hesitation, declared the disease a double pneu-
monia in its initial stage: tartar emetic, six grains; sulphate of
quinine eighteen grains, to be taken in three doses.   The patient
vomited a little and had but one stool; the next day, he thought
himself cured.   But as the *rale crepitant* had not entirely dis-
appeared with the cessation of the febrile paroxysm, the two
prescriptions were continued.   The following paroxysm was
very short; the *rale crepitant* was slightly developed, and the

hemoptysis reappeared; but the fever had scarcely ceased, when all the symptoms disappeared, (that is to say, as soon as the disease ceased, it no longer existed.) The tartar emetic was discontinued on the fifth day, the respiration having become pure and natural; the sulphate of quinine was continued for some days. The patient was now cured of the fever, and the anti-syphilitic treatment, which had been suspended, was resumed. Three weeks after, the intermittent fever reappeared; it was now simple and benign, and a few doses of the sulphate of quinine entirely arrested it; the patient remained six weeks longer in the hospital, and left it in good health.

This fact is important, since Laennec demonstrated by the stethescope the existence of a peripneumonia giving rise to tertian febrile paroxysms of a pernicious aspect, and diminishing in the apyrexia. That this case may be properly appreciated, and lest it should be thought that the inflammation of the lungs was the effect, and not the cause of the fever, it should be remarked, 1st, That Harvey found a *thick blood engorged in the lungs*, in dissecting subjects who had died in the cold stage of intermittent fever, after anhelation, sighing, prostration, a small, frequent, and irregular pulse; 2dly, That traces of inflammation found in the whole extent of the internal membrane of the trachea and bronchia, after poisoning by corrosive sublimate, have recently induced M. A. Devergie to believe that this salt acts also upon the lungs, although, as he remarks, experiments on animals have given no indication of this influence. Now, in the case which has just been mentioned, the patient was treated by mercurial frictions, and it was during this treatment that the peripneumonic fever was developed. The preparation of the metal was not the same; but it is not uncommon to observe acute or chronic inflammation of the lungs in venereal patients, treated by mercury under any form. On this subject I would refer the reader to the profound and able treatise of M. Jourdan on venereal diseases, in which all theoretical and practical questions relative to syphilis are laid down and discussed with equal talent and good faith.

The cylinder of Laennec, so useful in detecting the pulmonary inflammations which often complicate gastro-enteritis and cerebral phlegmasiæ, will be of still greater service in an investi-

gation of the seat of intermittent fevers; and there is every rea-
son to believe that the employment of this instrument will show
that peripneumony does not occur only in pernicious fevers.

Venesection, practised before the administration of the qui-
nine, would have increased its remedial powers, and, perhaps,
by preventing any farther paroxysms, would have rendered its
employment unnecessary.

We are indebted to M. Fleury for a remarkable case of perip-
neumonic fever, or rather of tertian peripneumony. A man, for-
ty-five years of age, of sanguine temperament, of well developed
form, and high complexion, entered the hospital on the 17th of
November, 1828, to be treated for a bronchitis, to which he said
he was very subject.   Until the 24th of the same month, he
presented nothing peculiar; but, on this day, he was seized with
acute and deep pain in the right side, with painful and anxious
inspiration.   The cough, which seemed to be relieved by de-
mulcents, became frequent, and was accompanied with a consi-
derable expectoration of sputa of yellowish red colour.   The
fever, from which he was suffering, had commenced with long
and violent rigors.   The sound given by the thorax, when care-
fully struck, was dull over the posterior and superior part of the
lung, and auscultation proved that the organ was with difficulty
permeable to the air: demulcent ptisan, white looch, thirty
leeches to the painful point, emollient cataplasms.   The fever
passed through the usual stages, and in the evening there was a
copious diaphoresis.   On the following day the apyrexia was
complete; all the symptoms of pneumonia ceased, and the sputa
became mucous, although still abundant.   This state continued
during the whole day; but, on the 26th, about four o'clock in
the morning, the fever declared itself anew, by rigors as in-
tense as those of the preceding paroxysm by dyspnœa, by a lan-
cinating pain in the side; in a word, by all the symptoms of
very intense pneumonia. As soon as a state of calm was re-
stored, and the equilibrium of the vital forces re-established, to
procure which, hot and demulcent drinks were administered, and
bottles filled with hot water applied to the patient, the sputa be-
came very bloody: twelve ounces of blood were taken, and the
white linctus and cataplasms were prescribed.   From this time
M. Fleury suspected an intermittent pneumonia, and proposed
to administer the quinine in the evening of the same day.   The

fever continuing, but with abated force, the quinine could not
be administered. On the following day the apyrexia was com-
plete; all the peripneumonic symptoms had disappeared, and the
patient, restored to a state of perfect calm, thought himself out
of danger. M. Fleury took advantage of the intermission, and
ordered a clyster of the decoction of bark, to which ten grains
of the sulphate of quinine were added; and in the course of the
day he administered a febrifuge potion. The fever appeared
again, but the sputa were only slightly streaked with blood, the
rigor only manifested itself in the feet, and the pneumonic symp-
toms presented nothing alarming. Simple lavements of the de-
coction of quinine were continued for some time on the days of
intermission, and emollients on the intermediate days, and the
patient in a short time recovered his health.

In the *dyspnœic* or *asthmatic* variety, the pain is of little in-
tensity, or there is no pain, the difficulty of respiration exces-
sive, suffocation imminent, no sputa, although the cough is very
strong. The state of the heart not having been explored with
care, and in many cases the oppression having continued after
the cessation of the paroxysm, it is probable, under this name,
benign gastric intermittents have been described, developed in
subjects whose bronchia, lungs, or heart have been affected with
some chronic disease.

The *catarrhal* variety, described by Comparetti, differs little
from the peripneumonic; although, in the case observed by this
physician, the face, the throat, and the eyes were red, the cough
dry, and more violent in the evening, the head painful, equally
with the chest, and the taste depraved; convulsions and stupor
supervened. What advantage is derived from assigning a parti-
cular name, altogether insignificant, to an intermittent irritation
of the bronchial mucous membrane, with sympathetic irritation
at first of the digestive mucous membrane, and afterwards of the
membranes of the brain? The latter organs are affected in eve-
ry case of pernicious intermittent which attains a high degree of
intensity. Irritation of the stomach and intestines is a very
usual concomitant of irritation of the bronchial mucous mem-
brane.

We should in the pernicious fevers which arise from irritation
of the respiratory organs, as well as in those derived from an ir-
ritation of the encephalon, endeavour to dissipate the gastro-en-

teritis, because the continuance of the latter during the apyrexia
may counteract the contralizant action (*action contralisante*) of
the bark.

4th. The *syncopal* is distinguished from the other varieties in
which fainting occurs, by the fact, that in this disease the patient
faints whenever he is moved, or attempts the slightest move-
ment; he does not complain of pain, but of great weakness, his
face and neck are covered with sweat, his eyes hollow and dull,
pulse small, depressed, and frequent; syncope recurs every in-
stant, no matter what precautions are taken.

Should this variety of the pernicious intermittent fever be
classed among those in which the heart is principally affected?
I do not think so; although I conform to the general opinion,
which considers the heart as the seat of the proximate cause of
syncope. Syncope occurs because pulsations of the heart are
suspended: but is not this suspension of the action of an organ,
so little exposed to the direct impression of morbific causes it-
self, the effect of a morbid state of the brain? The laws which
preside over the action of the heart in a state of health, favour
this opinion.

The *carditic* pernicious fever, of which M. Coutanceau[*] has
reported several cases, appears to be dependant, rather than the
preceding upon an active irritation of the heart. One of the pa-
tients complained, during the paroxysm, not only of violent pal-
pitations of the heart, but also of a cruel pain, which resembled
the sensation of a biting in this organ. This pain having at-
tained a certain degree of intensity, determined that indefinable
sensation which precedes and announces syncope; the patient was
deprived of all his senses, except that of hearing; he heard what
was said and wished to speak, but was incapable. During this
state, the arterial pulse and respiration were suspended, the pul-
sations of the heart were weaker and slower than usual. The
attacks of syncope generally continued for a quarter of an hour,
and they were longer in proportion to the interval between them,
which continued an hour or two. The first pernicious parox-
ysm which had been preceded by two others, so slight as to be
scarcely perceptible, had been calmed by the application of
leeches; bark and opium diminished the intensity of the third,

[*] Notice sur les Fievres pernicieuses qui ont regné epidémiquement à Bor-
deaux en 1809. Paris, in 8vo. p. 60.

and a fourth did not occur. The two other cases, observed by the same author, cannot be considered as belonging to the carditic variety, because, although there was syncope, the patient did not experience that acute sensation of biting, of torsion, which the patient mentioned above, experienced in so high a degree.

May not an acute pain in the superior part of the stomach, have been mistaken for a pain seated in the heart, or its connexions? If this was the case, the two last varieties are only shades of the *cardialgic* pernicious fever.

5th. The *uterine* pernicious fever, either simple or with simultaneous irritation of the stomach and uterus, has, I think, been observed by Gaillard. The paroxysms were characterized by vomiting and a metrorrhagy, which continued even into the apyrexia; the tongue was whitish, the face pale, the pulse small, concentrated, frequent, the abdomen tense and painful; the least motion renewed the vomiting and hemorrhage. A combination of fixed and diffusable stimulants of narcotics and tonics, appeared to determine the cure of this fever, in which the uterus was, perhaps, more affected than the stomach, although vomiting occurred: for it is well known how frequently this symptom is determined by an irritation of the uterus.

6th. The *nephritic*, described by Morton, was so evidently the result of an irritation, excited in the substance of the kidneys by the presence of calculi, that we are astonished to find this author endeavouring to discover an unknown proximate cause, when the true one was so obvious. The two patients had passed renal calculi. We find in the great work of Morgagni, several cases of death occurring with rapidity at the termination of the symptoms, the collection of which presents what is observed in the diseases, to which the name of pernicious fever is given: in these cases, on dissection, calculi were found in the uterus and kidneys. We may easily conceive, that an acute irritation of these parts may occasion an irremediable lesion of the brain, since the simple incision of the skin is sufficient, in a great operation, to render the patient delirious; since, also, death often follows this delirium.

The *cystic*, described by M. Coutanceau, was primitively cardialgic; the pain of the stomach was replaced by a pain in the region of the bladder, a pain which was only relieved by

bark.   The presence of bougies in the urethra, and chronic ir-
ritations of this canal, sometimes occasion pernicious attacks.

7th. The *rheumatic* or *arthritic*, described by Morton, was
characterized by pains, at first tensive, gravative, contusive; af-
terwards, lancinating: they prevented the movement of the
limbs.   They were accompanied with heat, sometimes transient,
and sometimes ardent, with præcordial anxiety, with unquencha-
ble thirst, with profound prostration, and with depression of the
pulse.   In this case, the gastro-enteritis was not equivocal, but
it would be difficult to decide whether the pain of the limbs was
sympathetic or primitive.

8th. We might class with pernicious intermittent fevers, the
algid, in which the rigor and cold are excessive, the heat which
only succeeds very slowly is inconsiderable, the thirst unquench-
able, the tongue dry and brown: there is, likewise, syncope, and
deglutition is embarrassed or impossible; every thing seems to
announce the approach of death, and, consequently, a profound
affection of the encephalon.   The excessive coldness of the sur-
face of the body, announcing only a violent internal congestion:
this symptom may be found in all the varieties of pernicious in-
termittent fevers, although it is most frequently the effect of gas-
tro-enteritis.

If a protracted rigor seems to constitute the whole paroxysm
in the algid fever, in the *diaphoretic*, on the contrary, the hot
stage commences so promptly, there is scarcely time to recog-
nise the cold stage, almost immediately on the establishment of
the hot stage, an abundant sweat flows from all parts.   This
sweat is thick, clammy, often cold, sometimes it does not appear
until the termination of the paroxysm.   The pulse is frequent,
but weak and small, the respiration short and difficult, the mus-
cular strength is completely prostrated, while the intellectual fa-
culties are unimpaired.   All these symptoms are not observed,
except after those of the most intense gastric irritation; but, in
many cases, the patient experiences the most violent pains in the
limbs, which appear to indicate that the brain performs a very
active part in the morbid condition, notwithstanding the integ-
rity of the intellectual functions.   The diaphoretic pernicious
has sometimes succeeded the *comatose;* a fact, which shows, as
M. Alibert properly remarks, that the numerous forms assumed
by pernicious fevers, do not belong to a special and constant cha-

racter, but should be considered as simple varieties.* I must re-
mark, that the skin is not an organ of sufficient importance, and
that the sweat is never sufficiently abundant, to warrant the opi-
nion that the danger is due to the state of this tissue in the dia-
phoretic fever. The sweat, like the sensation of cold, is only
a sympathetic symptom of the intense irritation, which consti-
tutes the disease, the seat of which should be investigated.

The *exanthematic, petechial* pernicious fever, described by
Comparetti, was only a variety of the gastro-intestinal, since it
was characterized by pain, a sense of constriction of the sto-
mach, and sometimes with a vomiting, accompanied by thirst.
The eruption of red spots, after which the symptoms diminished
in intensity, and the pulse became large and soft; and, lastly, its
frequency was only a secondary symptom, which did not an-
nounce in the skin a morbid condition capable of occasioning
death.   A case of this kind, reported by M. Alibert, appears to
me to belong to cerebral pernicious fever. It is unfortunate, that
this subject was claimed by his relations, and, therefore, could
not be examined.

The *icteric* pernicious fever of Gilbert, presents but a sin-
gle symptom more than those of the gastro-intestinal irritation,
which constituted the disease.

These pernicious fevers have all been observed either with
the tertian or double tertian type; in the latter case, the perni-
cious paroxysms occur on alternate days; they are separated by
paroxysms of benign intermittent, at least at the commencement:
for, in a short time, they not only assume a well characterized
double tertian type, but even become sub-intrant. We, how-
ever, find in authors some cases of pernicious fever of the quar-
tan type.

After having briefly described the numerous varieties of per-
nicious intermittent fevers, and having made a few remarks with
regard to their seat and nature, it remains to consider them in
general under these two points of view.

Among the characteristic phenomena of these fevers, we most
frequently observe those which announce irritation of the sto-
mach and intestines, and, afterwards, those which indicate cere-
bral irritation; next come the symptoms which indicate that the

* Op. cit., p. 27.

heart, the lungs, the pleura, the uterus, the kidneys, the bladder, are, if not the only point, at least one of the points of departure of the morbific action; finally, the skin presents various sympathetic phenomena, which only merit attention when we view them in connexion with all the others. If gastro-enteritis occurs in the most pernicious intermittents, the irritation is always shared by the brain in a very high degree. The case is the same in every pernicious fever, peripneumonic, pleuritic, nephritic, &c. Finally, it is probable that gastro-enteritis occurs more frequently than we should be led to think, from the account of authors, since they have not always exactly indicated the state of the tongue and abdomen. We cannot but recognise in most carotic pernicious fevers, primitive irritations of the encephalon. Whence I draw the conclusion, that all pernicious intermittent fevers are not gastro-enterites, and that there is no pernicious intermittent fever, whatever may be its seat, which may not assume the pernicious character, when the brain participates in it.

All the arguments which I used in demonstrating that benign intermittents, are of the same nature with continued fevers, apply equally to pernicious intermittents. The symptoms are the same, but some of them are more marked. The causes are the same. If marsh exhalations give rise to pernicious intermittent fever more frequently than to malignant continued fever, this is not enough to establish an essential difference between them, since the difference arises only from the mode of action of the cause, and from the idiosyncrasy of the patient.

If pathological anatomy has not yet demonstrated that benign intermittent is of the same nature with continued fever, it has not done more to demonstrate the identity of the latter with the pernicious intermittent. The last are common in some districts, and at certain seasons when they do not prove fatal, they diminish in intensity, and pass to the chronic state, like the benign. As yet but a very small number of subjects has been examined after pernicious intermittent, because sufficient importance has not been attached to this kind of research. Why should these investigations have been pursued in pernicious fevers, when they were scarcely made in cases of malignant fever? However, it appears from some facts reported in the works of Spigel, Harvey, Bonet, Lancisi, Hoffman, Morgagni, Aurivill, Senac, Lieutaud,

and MM. Alibert, Fizeau, and Broussais,* that after intermittents which proved fatal after a few paroxysms, there were generally found unequivocal traces of acute or chronic inflammation of the stomach, intestines, and liver. The spleen almost always presented a softening of its texture, which is probably the result of an inflammation of this organ. Sometimes traces of inflammation have been observed in the meninges, in the brain, and in the lungs. If these facts are not sufficiently numerous to warrant us in deducing from them decisive conclusions, in favour of our opinion with regard to the nature and seat of intermittent fevers in general, and of pernicious fevers in particular, they tend to show that farther researches in pathological anatomy, as they are conducted at the present day, will tend to demonstrate the identity of the nature and seat of continued and intermittent fevers. We cannot too urgently solicit the physicians of those countries in which pernicious fevers prevail, to engage in these researches, and to neglect no opportunity of enriching science with facts which may demonstrate the truth of the new pyretological doctrine. Death sometimes occurring in the cold stage, most frequently in the hot, very seldom in the sweating stage, often after the disease has assumed the continued form, these different circumstances, which may vary the result of their investigations, should be carefully noted.

M. Bailly, profiting by his long residence at Rome, has reported a great number of autopsic examinations, of which I shall present a summary.

At the termination of pernicious intermittent fevers, in which the encephalic symptoms predominated, such as coma, delirium, convulsions, he always found traces of arachnitis or encephalitis, united or isolated, always traces of gastritis or enteritis, often of splenitis; sometimes of hepatitis, peritonitis or pneumonitis, with or without traces of lesion in the cranium. After pernicious fevers, with a predominance of abdominal symptoms, traces of inflammation of the stomach and intestines were constantly found; they were very frequently accompanied by those of splenitis, which in certain cases were alone perceptible; inflammation of the gall bladder, in a few cases, accompanied these

* Many of these facts are given in the " *Essai sur les Irritations Intermittentes*," of M. P. J. Montgellaz, a work which, notwithstanding some errors, deserves to be read.

phlegmasiæ. Gastritis seldom existed alone. In one subject the arachnoid, the encephalon, the intestines, the spleen, the peritoneum and pericardium, all presented traces of phlegmasia. The spleen was frequently found ruptured. After pernicious algid fevers, also, traces of inflammation were detected in the encephalon and abdominal viscera. When there had been prominent pectoral symptoms, serious lesions of the lungs were discovered; in one of the subjects there were cavities in these organs. The importance of these anatomical researches are great; they tend to confirm the information we possess with regard to continued fevers, and what we presume from analogy with regard to intermittent fevers. *

M. Gassand has published two cases of pernicious fever, important as it regards pathological anatomy.

A Swiss drummer, aged twenty-seven years, of bilioso-sanguine temperament, had several febrile paroxysms at the commencement of August; he took brandy and pepper with a view to arrest them, but did not succeed. After three unsuccessful trials, finding himself very ill, he determined to enter the hospital on the morning of the 15th; the paroxysm commenced with great coldness of the whole body, accompanied with grinding of the teeth. After this stage, which continued two hours, the pain of the head became insupportable, the heat of the epigastrium very considerable, and the pulse assumed a remarkable fulness and frequency; the patient urinated with difficulty: in the evening the paroxysm terminated in a clammy and fetid sweat. The paroxysm of the 17th was more violent. Sixteen ounces of blood were taken and twelve grains of the sulphate of quinine administered in a potion. On the 18th, the paroxysm returned, but in a less violent manner. Abstinence, gum-water, sulphate of quinine twelve grains. On the 19th, no paroxysm. Severe regimen, six grains of the sulphate of quinine. The patient had no fever for six days, and was allowed some mild articles of food, when on the 24th, he procured a bottle of wine which he drank in part. In the evening of the same day he was seized with an intense and prolonged cold stage; his teeth chattered for three hours; with all the covering that could be put upon him it was impossible to warm him. This stage having passed, a

* E. M. Bailly, Traité Anatomico-Pathologique des Fievres Intermittentes simple et pernicieuses; Paris, 1825, in 8vo.

corresponding hot stage succeeded. There was now agitation and delirium; the patient wished to make his escape; the attendants seized him at the moment he was climbing the gate of the hospital, and carried him to his bed, where he was watched until morning. On the 25th, the head and chest were covered with a cold sweat, the patient attempted to vomit, but threw up only a little bile. He answered no question, the dilated pupils, the fixed eyes, sparkling and haggard, indicated a cerebral congestion of the most intense character. Respiration was stertorous, the pulse full and very frequent. There were convulsive movements. The patient being incapable of swallowing any thing, a lavement of the decoction of bark, containing thirty grains of the sulphate of quinine, was administered. Venesection was practised, and at the same time the patient was placed in a warm bath, while cold effusions were employed to the head. At six o'clock in the evening there was a melioration, the patient spoke and took two potions containing the sulphate of quinine in high doses. On the 26th, a violent paroxysm: sulphate of quinine, thirty leeches to the jugulars, mustard poultices to the feet. On the 27th, continuation of the paroxysm of the 26th; tetanic rigidity of the whole body, immobility of the eyes and eye-lids, sonorous respiration; general sweat of a fetid odour, frequent and involuntary dejections; deglutition impossible. Lavement of bark, blisters to the limbs. At five o'clock in the evening remission almost imperceptible. At eleven at night exacerbation, intermittent rale. Death occurred on the 28th at two o'clock in the morning. Sanguine effusion between the two folds of the arachnoid, which was red, thick and a little opaque; the tissue of the encephalon appeared softened, its vessels, as well as those of the plexus choroides, were considerably injected. The lateral ventricles contained three or four ounces of serosity. There was nothing remarkable in the thorax. The stomach presented two patches of a deep red towards the pyloric orifice; the mucous membrane appeared somewhat softened; the jejunum and ilium especially, presented at intervals some reddish spots; the large intestine was in its natural state.

A soldier, aged twenty-three years, of a nervoso-lymphatic temperament, entered the hospital on the 13th of September, 1828, on the third day of a quotidian intermittent. Diverse symptoms, particularly a pain deeply seated in the abdomen, diarrhœa

and cephalalgy, led to the belief of a gastro-enteritis, which it was important to combat in the first place. Rice and milk, solution of gum Arabic, mustard pediluvium; emollient fomentations to the abdomen. These means were ineffectual, and on the 18th, thirty leeches were applied to the abdomen and a rigorous diet was prescribed. This topical blood letting produced a melioration of the symptoms. Yet the diarrhœa returned; the skin, always acrid and burning to the touch, assumed a bluish yellow tint, the pulse became accelerated, the prostration, which became more prominent, still apparently permitted the application of twenty leeches, on the 21st, to the umbilical region and anus. On the 22d, insomnolence was continual, the thirst very intense, and the patient uttered groans during the whole night; the skin was in a perspirable state, the prostration extreme, but there was complete apyrexia. Broth morning and evening, frictions on the limbs, with a camphorated decoction of bark and a gummy potion with a grain of the gummy extract of opium, of which the patient drank only the half, at about 9 o'clock in the evening. The next day, at six o'clock in the morning, the patient was found in a comatose state, which had manifested itself at seven o'clock on the preceding evening. Involuntary excretions, and a copious sweat had occurred about five o'clock. The pulse was large and full, and exceeded ninety-two pulsations in a minute. The patient, when pinched, opened his eyes a little, and then closed them without answering or seeming to understand what was said to him; respiration was stertorous and deep, and deglutition impossible. In hopes that the paroxysm would terminate happily, M. Gassand prescribed a lavement of bark with ten grains of the sulphate of quinine, and in ten hours the patient recovered his speech and senses; he did not retain the injection, and he swallowed with less difficulty two grains of quinine, which were to be repeated every hour. But they were not administered, and in the evening M. Gassand administered some grains in syrup. The same symptoms as those of the preceding night reappeared with more intensity. On the morning of the 24th, a comatose state more profound than the evening before; greater insensibility, tracheal râle. A fetid odour was exhaled with the insensible transpiration. The pulse was profound and very frequent. He was moribund in the afternoon, and death occurred at five o'clock in the evening. The body

was examined five hours after. Straw-coloured tint of the skin. The glans and the anterior third of the penis were greenish and sphacelated. The external aspect of the brain, and particularly of the cerebellum, was of a singular bluish red; the vessels were extremely gorged with blood, and the arachnoid, covering the cerebral hemispheres, above and before, was infiltrated with an abundant clear serosity; this membrane being itself very red, owing to sanguine infiltration. The stomach presented, internally a very slight inflammatory redness; the colour was much deeper over a surface which might be covered with the hollow of the hand. The other viscera presented nothing remarkable.

M. Gasté has reported a post mortem examination, which tends to show that the œdema of the lungs performs a part in some intermittent fevers. Huct, aged twenty-two years, of fair complexion, lymphatic, without beard, appearing as though he had scarcely attained the age of puberty, entered the hospital in December, 1828, for a tertian fever which yielded to the sulphate of quinine, and reappeared a great many times after the employment of this remedy and other febrifuge measures. The flesh of the patient was singularly soft, the skin of a very decided straw colour: his gums became inflamed and ulcerated, his breath was fetid, and the cellular tissue appeared to be generally infiltrated. Still he had a voracious appetite; he took little exercise, his apathy and indifference were extraordinary, and, as he was very tired of his protracted stay in the hospital, his dismission was granted on the 11th of March, 1829, with the request that he might be exempted from service for a definite period. He returned on the following June, in a state of remarkable bloating and infiltration, with respiration so greatly impeded that death seemed near. He was put upon a rigid diet, in the use of gummy drinks, or of veal broth medicated with nitre. He sometimes laid upon the back, at others times on the side, but often sat up in bed, being threatened with suffocation. Both sides of the chest sounded well on percussion; the skin was of a very clear and bluish yellow; the indifference of the patient was extreme; he was discontented with every thing which was done for him. Finally, he died on the 20th of June, after a long agony, during which he expectorated much serous fluid. The two sides of the thorax sounded well on percussion. Both lungs ad-

hered to the thoracic parietes; their tissue was pale, and had the appearance of having been macerated for a long time. From the incisions made into their substance, there flowed a very abundant serosity, very faintly coloured with red; the incisions, examined attentively, presented a surface marked with small elevations, similar to those which appear on the skin in consequence of cold. The heart was very large and flaccid. The pericardium contained more than a demilitre of citron-coloured serosity. The stomach and digestive canal were pale and softened.*

Pernicious intermittents do not differ from the benign, with this exception; that in the former, the principal symptoms, those which indicate the seat of the disease, are manifest, and are easily distinguished from the well characterized sympathetic symptoms which may accompany them. Considered in their nature, according to their symptoms, these fevers are then only more intense than benign intermittents; considered in their seat, they present more frequently an affection of the encephalon, always of a serious character, and this is a new proof of their analogy to continued fever.

"There is no doubt," says F. Hoffman, "that the membranes of the spinal marrow, having the same structure, the same nature, and the same use as those of the brain, may be affected with a spasmodic constriction; and that this very often occurs, particularly in fevers, and especially in intermittent fever; for the remarkable shivering, affecting the whole body, the coldness, the constriction of the pores and vessels of the skin, its paleness, as well as the yawning and pandiculations, are nervous affections which originate in the spinal marrow, and the pain which is felt about the first lumbar vertebra, at the commencement of most febrile movements, is an additional fact in support of this opinion."

This opinion, which was reproduced in 1821, by M. Alard, was again brought forward in 1825 by M. Rayer, but with modifications which render it erroneous, by applying it exclusively to intermittent fever, which would thus become a cerebro-spinal neurosis, like epilepsy and hysteria, while continued fevers would be inflammations of one or more organs. It is even as-

* Gasté, Journ. Univ. des Sc. Med.

serted that *intermittent differ from continued fevers, as
much as that which exists differs from that which does not
exist.* The complete absurdity of this proposition must be ob-
vious to every one.

M. E. M. Bailly lays it down as a principle, that in the morn-
ing, at the moment of our rising, congestion ceases in the brain
and establishes itself in the stomach, owing to the vertical posi-
tion, and that then the influence of the nervous system is more
strongly felt over the whole body; that, on the other hand, when
we retire to bed, cerebral congestion establishes itself, the con-
gestion of the stomach and the nervous influence cease, owing
to the horizontal position. According to him, the intermittent
fever is only an exaggeration of this series of organic acts. The
principal proof which he adduces, is, that animals which are not
subject to this alternation of the vertical and horizontal position
are not affected with intermittent fevers in places in which they
prevail epidemically. M. Bailly does not, however, assert that
they are never affected, but merely that they are less frequent-
ly affected than the human species. Candour is evinced in this
limitation of the proposition; but the fact that the exemption of
the lower animals is not demonstrated,† invalidates the principal
proof of M. Bailly. This physician adds, that animals subject-
ed to the conditions which develop intermittent fevers among
men, suffer from continued diseases, and this fact is certainly fa-
vourable to his opinion; but he adds, "We find in animals, after
continued diseases, the same organic alterations as in man after
intermittent fever." Now, certainly, diseases which are refer-
rible to the same causes, and which leave after them the same
alterations, cannot but be identical in their nature. M. Bailly

* Dict. de Med., XII. p. 390.

† M. Lecharpentier mentions a case of intermittent fever in a horse, re-
ported by Fromage. He adds, that if intermittent fever belongs particular-
ly to the human race on account of their more exalted sensibility, and espe-
cially on account of the organization of their skin, we yet daily observe in
domestic quadrupeds, external local periodical affections, which are evident-
ly the effect of the effluvia of damp and marshy places; such is particularly
the intermittent irritation of the ball of the eye in the monodactyles, and
particularly in young horses at the time of dentition: this disease is in the
commencement completely intermittent, and is then curable by bark. (*Me-
moire sur la Periodicite, lu, en 1825, a la Society Medicale l'Emulation.*)

should, from this fact, have concluded that continued epizootic diseases, and intermittent epidemics, differ merely in their type. But he only draws the conclusion, that the same causes determine intermittent diseases in man, and continued diseases in brutes; for this reason only, that the former, while awake, is in the vertical position, and while asleep, in a horizontal one, while the position of the latter is at all times horizontal. If there was no other difference between men and animals than that of position, M. Bailly might, perhaps, have discovered the cause of the difference of their diseases; but it remains for him to prove that this is the only, or the primary difference which exists between the organization of the human species and the lower animals. It is hardly necessary to remark, that in the countries in which men are affected with intermittent diseases, and animals with continued diseases, there are some men who, from the same causes, contract continued diseases, notwithstanding their postures during sleeping and waking. The theory, then, of M. Bailly is erroneous in its fundamental position. If he persists in asserting that the intermittent fever is the exaggeration of the modifications produced in the organism by the alternation of night and day, we shall readily agree with him, provided he will likewise recognise this exaggeration, of a permanent character, in continued fever. Finally, it must be granted, that when the exaggeration of a congestion leaves after it traces of inflammation, by no means equivocal, it cannot but be an inflammation.

Such is the result of the anatomical researches of M. Bailly; he has, in part, realized the desire expressed in the first edition of this work, and we are no longer permitted to doubt that intermittent fevers are owing to inflammations, as well as continued fevers. "In all the post mortem examinations," he remarks, "which I have made of those who died of pernicious intermittent fevers, I have always found unequivocal traces of an inflammation, which, in intensity, generally much surpassed the inflammatory lesions which are observed after continued fevers." The traces of which he speaks were not equivocal; for he adds, "It is already perceived that I do not speak here of those organic alterations which are often the subject of discussion between physicians of opposite sentiments; some being led by their theory to see nothing morbid in appearances, in which others cannot but recognise structural derangement. I speak

now of disorganizations so palpable as to allow of but one opi-
nion."*

Treatment of Pernicious Intermittent Fevers.

If it be improper to permit benign intermittents to pursue
their course, it is much more so not to oppose energetically per-
nicious intermittents, from the moment they are recognised; for
they almost always occasion death in the second, third, fourth,
or, at the latest, in the fifth paroxysm. I say *almost always,*
because I am induced to believe, from some facts, that these fe-
vers, abandoned to nature, are not always fatal.† But the ex-
ceptions are so few in number, that we are bound to keep the
rule always in view.

When, in the course of a paroxysm of intermittent fever,
which has hitherto been benign, certain symptoms assume the
highest degree of intensity, or unfavourable symptoms super-
vene, which had not hitherto made their appearance; when the
cold stage is excessively prolonged, at the same time that the
pulse remains small and concentrated, and the features undergo
a profound alteration, it is to be apprehended that the next at-
tack will be pernicious, particularly if fevers of this character
are prevalent.

If the apyrexia is complete, the bark must be instantly admi-
nistered, in a mean dose, without waiting for the disease to be-
come more intense; for the first duty of the physician is to cure,
and not to try experiments.

If, notwithstanding the employment of the bark, the parox-
ysm recurs with the phenomena of one of the pernicious fevers
already described, there is not a moment to be lost: however
short may be the succeeding apyrexia, we must seize this favour-
able moment to administer the bark, not with reserve, but in a
full dose.

When the physician is called in during a very short apyrexia,
which has been preceded by one or more pernicious paroxysms,
he must instantly administer the bark in large doses, lest he

* Traité Anatomico-Pathologique des Fievres Intermittentes. Paris, 1825,
in 8vo.

† See my Additions to the Œuvres de Medicine Pratique de Pujol. Paris,
1823.

should have to reproach himself with having permitted a precious moment to pass unimproved, which perhaps will not return.

When the paroxysms are sub-intrant, the moment of the decline of the one, and the commencement of the other, must be taken for the exhibition of the bark.

After the administration of the bark, should the paroxysms return, with symptoms not less alarming, or even more intense, we must endeavour to discover whether the inefficacy of the bark is in consequence of its bad quality, or of the smallness of the dose.

If, on the other hand, there is reason to suppose that the bark has itself exasperated or provoked the gastric irritation, if the tongue is dry at its centre and red on its edges, and if the epigastrium is painful during the apyrexia, the success of the next dose of the bark must be ensured by acidulated drinks and the application of leeches to the epigastrium.

If the paroxysm returns, but without the symptoms which threaten a fatal termination, it is not necessary to augment the dose of this substance, but its employment must be continued.

Finally, if the paroxysm does not return, the employment of the bark must be continued in the same dose for several days, afterwards in doses gradually decreasing for one or even several weeks, in the same manner as though the paroxysm was expected; that is to say, in administering the bark, that period of the day must be avoided on which the paroxysms formerly occurred.

Whenever the pernicious character of intermittent fever is recognised, the bark should always be given in substance, in pure water, or in some distilled water, and as long as possible before the paroxysm which we wish to prevent; the dose should be at least six drams, often an ounce and a half, sometimes two ounces, and even more: Sims gave as much as six ounces. The half or at least the third, is to be taken at once, and the remainder in doses, gradually decreasing, in such a manner that the whole may be taken before the presumed instant of the paroxysm, should it occur.

In proportion to the quantity of bark taken in a short space of time, will be the certainty of its effects.

If the fever is a double tertian, a strong dose of bark should
be directed against the pernicious paroxysm, and a smaller one
against that which does not present this character.

It has been proposed to administer the bark in doses of one or
two drams only, with a view to mitigate the intensity of the pa-
roxyms, without making them cease entirely.   The advantages
of this method are very problematical, except in certain cases,
in which the stomach retains its irritation during the apyrexia;
for, under these circumstances, a less considerable dose of bark
may act with almost as much energy as a stronger dose given
under other circumstances, without, however, provoking vo-
miting.

When the irritation of the stomach is manifest, even in the
apyrexia, and when we are obliged to administer the bark at the
decline, or even in the course of the paroxysm, and consequent-
ly, when the stomach is for the most part irritated; finally, in
pernicious fevers, which are evidently gastric, the rejection of
the bark is sometimes prevented, as well as the pains of the sto-
mach, which it occasions under such circumstances, and its effi-
cacy is ensured by associating it with opium.   Far from being
advantageous in pernicious carotic or cephalalgic fevers, this
combination might augment the stupor or pain of the head; might
we not resort to it with success in pernicious, convulsive or de-
lirious fevers?

In cases in which deglutition has been impossible, the danger
imminent, and the gastro-enteritis so violent, even in the apy-
rexia, that the stomach obstinately rejected the bark, it has
sometimes been successfully administered in a lavement con-
taining half an ounce or an ounce of this medicine, to four ounces
of water, or the patient has been plunged in a bath of a strong
decoction of bark.

Frictions with the tincture of bark have been equally advan-
tageous in certain cases.

When we are called in during the paroxysm of pernicious fever,
if there have been two, and especially if there have been three
paroxysms of the same nature, and if there be reason to appre-
hend that it will terminate fatally, Torti advises the instant
administration of bark, without waiting for the apyrexia, at the
risk of its being rejected, and even at the risk of seeing it aggravate

the state of the patient. Others, among whom are Senac and M. Alibert, think that this desperate method should not be resorted to, except when the stomach and intestines are free from all irritation.

Would it be proper, whenever we are called in during the course of the paroxysm, to combat instantly the irritation by the antiphlogistic treatment, as though it were continued, and to wait for the apyrexia, to administer the bark? If we only considered the good effects of this method in many benign intermittents, we should be tempted to answer affirmatively; but if, under such treatment, the patient should die during the paroxysm, how severely should we reproach ourselves!

When the stomach is greatly irritated, the bark cannot be administered without danger: to give it under such circumstances, is to risk all to save all. When the stomach is not irritated, or is only slightly so, the bark may be administered, and with the less danger; since, should symptoms of gastritis supervene, there will always be time to combat them: besides, there is nothing to prevent the employment, at the same time, of the antiphlogistic and derivative means, indicated by the cerebral, pulmonary, or other irritation which constitutes the disease.

In the course of a pernicious paroxysm, when the symptoms announce a violent irritation, it would be hazardous to prescribe bark in any form. We must then limit ourselves to the employment of the antiphlogistic measures employed, with a reference to the irritated organs, revulsives applied to the skin with a view to hasten the termination of the paroxysm, and obtain an intermission.

Are there pernicious fevers in which we should endeavour to fulfil preliminary indications, such, for example, as combating the plethora or the saburra of the primæ viæ, during the apyrexia, before giving the bark? Torti has decidedly condemned this method. Many practitioners think that they should sometimes ensure the action of the bark by the previous employment of blood-letting, emetics and purgatives, according to the inflammatory, bilious or mucous character of the paroxysms. It is certain that these three measures have sometimes appeared to favour the action of the bark; blood-letting has been advantageously practised, especially in subjects disposed to cerebral congestion, to inflammations of the viscera, and particularly of the lungs. This problem is certainly one of the most difficult to

solve in therapeutics. To arrive at as satisfactory a solution as pos-
sible, let it be remarked, in the first place, that there is not always
time to employ any of these measures in the treatment of perni-
cious fevers. When the apyrexia is short, we must take advan-
tage of it, to prescribe the bark. When the apyrexia is not so
short as to necessitate the administration of this medicine imme-
diately on the termination of the paroxysm, we should not only
bleed, if there are marked signs of sur-excitation of the heart, but
also apply a large number of leeches to the epigastrium; when
there are symptoms of gastric embarrassment, and still more if
these is manifest irritation of the stomach and intestines, I re-
commend a great number of leeches, for instance from twenty to
forty; since, in consequence of the urgency of the case, we can-
not permit the blood to flow for a long time, and we must be on
our guard against the occurrence of syncope: whenever the
leeches are full we must remove them, arrest the flow of blood,
administer the bark, and cover the surface of the body with hot
cloths. There is every reason to believe that this treatment
should be preferred to emetics and purgatives, when the disease
is owing, either entirely, or in a great measure, to gastro-en-
teritis.

" Do not at the commencement treat as pernicious," says J.
P. Frank, " an intermittent fever which presents a certain de-
gree of intensity in its symptoms; do not believe that bark al-
ways suffices for the cure of this disease; pernicious fevers have
also their complications, which are by no means rare, sometimes
plethora or a sanguine congestion of the head, the spinal mar-
row, the chest or the abdomen require blood-letting, especially
topical blood-letting by leeches and cups; sometimes, in conse-
quence of these preliminary means, the malignity of the disease en-
tirely disappears, and the disease assumes a more benign aspect."

With the view to procure a longer apyrexia, and consequently
the time necessary for the administration of the bark, Giannini
plunged his patients into cold baths, to abridge the duration of
the paroxysm, and hasten the development of the hot and sweat-
ing stages. This rash practice must be rejected by every pru-
dent physician, convinced of this truth, that although he cannot
always cure, he should never injure.

During the administration of the bark, the patient should avoid
every cause of irritation, all mental emotion, and every thing

that might have a tendency to operate unfavourably on the brain or stomach.

The regimen in the apyrexia, and the general care of the patient during the paroxysm, should be the same as in benign intermittents.

When the bark decidedly exasperates the paroxysms, and prolongs them notwithstanding every thing that may be done to prevent this result, all that it remains in our power to do is to seek in derivatives of the skin, in blood-letting, in cold applications to the head, and hot pediluvia, opium and the acids, the means, too often ineffectual, of arresting the progress of the disease.

If the fever becomes continued, we must abandon all hope of curing it by means of bark, and treat it according to the principles laid down in the chapter upon continued ataxic fevers.

The experienced practitioner, alone, can distinguish between sub-intrant intermittent fever, which may sometimes be successfully combatted with the bark, from the intermittent fever passing into the continued type, and in which, consequently, this medium must be hurtful.

How has it escaped observation, that if the bark is generally injurious, or, at least, inefficacious, when administered during the paroxysms of intermittent fever, it must be still more improper in continued fever? I have shown that the bark being administered during the apyrexia, its tonic quality does not necessarily prove that benign intermittents are not owing to an irritation. The same remarks apply to pernicious fevers in general; but in the choleric, the cardialgic, and dysenteric variety, this application becomes more difficult, and in appearance less satisfactory. It is objected that the bark cures intermittent fever even when the pain continues during the apyrexia, and when they are sub-intrant. This proposition is too general; the authors who have advanced it, have only mentioned those cases which they have successfully treated, and I cannot but remark, on the present occasion, that of all those who have traced the history of epidemic pernicious fevers, there are few who have confessed that death has ever been hastened or determined by this febrifuge. When death occurs, it is always, according to them, because the bark was not administered sufficiently soon, or was exhibited in too feeble a dose, or was of an inferior qua-

lity. They seem not even to have imagined that the violence of the disease could ever bid defiance to the powers of the medicine. M. Alibert has not, however, omitted to record cases in which the patients have died in consequence of having taken the bark immediately before the paroxysm.

During his residence in Holland, M. Broussais observed that no intermittent fevers, accompanied with cardialgia, vomiting, and colic, were successfully combated by the bark. In Italy he witnessed the death of a patient, by no means plethoric, affected with a tertian fever, which, after the first dose, became quotidian, and then continued. On dissection he detected manifest inflammation of the lungs and stomach: the latter organ had been very sensible. Another subject, placed at first under the same circumstances, was cured by lemonade, and other relaxants and sedatives, which were ineffectual in the former.

From this time M. Broussais divided patients affected with intermittent fever into two classes: 1st, Those who could bear bitters and bark; 2dly, Those whose stomachs required milder means. It was soon demonstrated to him that these diseases do not generally become mortal, except in consequence of inflammation of the viscera. Tartar emetic gave an increased degree of intensity to the irritation of the digestive organs; bark, wine, and bitters changed it into a phlogosis of a permanent and fixed character, and the fever became continued: it was necessary to resort to mucilaginous and acidulated drinks. Tartar emetic was the least injurious of these means, with the exception of ipecacuanha: all emetics, however, even those which consisted only of pure water, or of water mixed with oil, honey, or butter, were injurious: the vomiting, which was excited, continued sometimes during several days; at other times a single emetic caused the transition of the fever to the continued type. " Finally," says M. Broussais, " I have seen death supervene during the operation of the remedy, and I have had cause to congratulate myself that I witnessed this unfortunate result in the practice of others, before I had exposed myself to a similar reverse."*

If emetics and bitters have produced such results in intermittent fevers, which do not appear to be pernicious, is there not

* Histoire des Phlegmasies Chroniques, 2d edit. p. 127—136.

reason to believe that the bark may not always be efficacious, and that it may even hasten death in those cases which evidently present this character, when the digestive passages are the principal seat of the irritation? I do not wish to dissuade from the employment of bark in pernicious fevers, nor to depreciate the results of the experience of physicians justly celebrated; but only to guard young practitioners against those authors who advise to persevere boldly in the employment of bark, even when it increases the intensity of these fevers.

I think it is proper, in this place, to make some general reflections with regard to the action of bark in intermittent fevers, whether benign or pernicious, compared with the effects of this medicine in continued fevers, even at the risk of falling into repetitions, which perhaps may not be devoid of utility.

If the brain is entirely free from lesion, or nearly so, in benign intermittents, it is more affected at the commencement of many pernicious intermittents; it is profoundly irritated in all cases of the latter, when they have arrived at the highest degree of intensity, as well as in continued fevers. It is, therefore, necessary to endeavour principally to prevent the sympathetic affection of this organ, or to diminish, by a powerful revulsion, the irritation which it experiences. Such is likewise the object to be kept in view in continued fevers; but, in the latter, the visceral irritation which provokes that of the brain is continued; that of the brain is likewise so, whether it be premature or secondary. How can we expect to operate a salutary derivation when the irritation continues in all its force until it has extinguished the vital action? It is on this account that the bark, far from curing continued ataxic fever, aggravates it. In ataxic intermittents, on the contrary, by seizing the instant when the abdominal irritation has ceased, to employ the means which may prevent its return, we prevent with certainty the cerebral irritation which might follow; and the case is the same with an intermittent irritation of the heart, the lungs, or any other organ. If the encephalon alone is irritated, we likewise, in this case, attempt to operate a revulsion by anticipation, if we may so express it, with the view of preventing the return of the irritation of the organ which is most essential to the maintenance of life.

It is time then that the successful employment of the bark in pernicious fevers should cease to authorize the prodigal exhibi-

tion of it in continued fevers, and that its success in this case should no longer be opposed to a theory which it confirms instead of confuting.

The cases in which the bark is administered with advantage, even when the stomach is irritated in the apyrexia, and those in which it is successfully administered in the intermission, scarcely perceptible, which separates the paroxysms of sub-intrant intermittents, or even in the course of the paroxysm when it is feared that it may prove fatal, should be considered as rare exceptions; to which, principles, established upon facts much more numerous, should not be sacrificed; and which, moreover, it is sufficient to relate, to demonstrate that they are not opposed to these principles.

When the stomach is still irritated in the apyrexia, it is always much less so than during the paroxysm, but the bark is often rejected, and more frequently inefficacious, except when this organ is perfectly sound during the apyrexia. The gastric irritation persists in the interval of the paroxysm of pernicious cardialgic fever more than in any other; this is also the fever in which we should fear most the failure of this remedy. When it does not fail, the patient often suffers for years, or even during his whole life, from painful digestion; he is subject to derangement of the stomach from the slightest cause, having exchanged an acute gastritis, which threatened his life, for a chronic gastritis, the effect of the remedy which has saved his life. This change is certainly preferable to death, and we should not hesitate to produce it; but we should be aware that we are substituting for an acute mortal disease, a chronic one, which will require the employment of emollients and regimen, when all fear of the return of the pernicious periodical exacerbation shall have ceased.

In sub-intrant fevers, the bark fails very often, or it induces the continued type; and, if it sometimes cures the intermittent fever, it more frequently gives rise to a mortal continued fever. What stronger proof could we have of the inflammatory nature of pernicious intermittent fever, and of the excitant and non-specific action of bark, in the latter, as well as in continued fever? When the sub-intrant fever is apoplectic or syncopal, the bark succeeds more frequently than in the sub-intrant cardialgic or choleric, because the digestive passages are more irritated in

the latter: this fact forms another proof in favour of the opinion which I consider it my duty to advocate. A very limited number of cases have been reported in which a cure has been obtained, although the bark was given during the paroxysm through an apprehension that it might terminate fatally.

The more nearly intermittent fever approaches the continued, the less efficacious is the bark, and the more does it lose its antifebrile qualities to manifest only irritating qualities. Is it not evident, however, that the action of this medicine upon the mucous membrane of the stomach must be the same in both cases. However different may be the nature of these diseases, it cannot change that of the medicine; consequently, the difference in the results of the action of the remedy is derived from the difference of the organic state: now, since it has been demonstrated, that the organs are affected in intermittent fever in the same manner as in continued fever, and that the only difference between them is, that in the one the organic morbid condition is continued, while in the other it is intermittent or subject to exacerbations which provoke the manifestation of the sympathies, I hence conclude, that if the bark cures the former and not the latter, the reason is, that in intermittent fevers it acts upon organs which are sound or feebly irritated, while in continued fevers it acts upon organs strongly irritated.

M. Tommasini divides intermittent fever into *hypersthenic*, resulting from excess of stimulus and determined by exciting causes; *hyposthenic*, derived from a contra-stimulus, and determined by depressing causes; and *irritative*, resulting from a disturbance of excitement, to a development of the sympathies of relation, in consequence of material causes which, at least primitively, are neither exciting nor depressing. In accordance with these views, he admits, 1st, that certain intermittents cease after some paroxysms without the aid of art, in consequence of the sweat; 2d, that others are arrested by the occurrence of some changes in the circumstances of the patient, not necessarily requiring the bark, which may be replaced by any other bitter, by unaccustomed aliment, or an unusual sensation; 3d, that blood-letting, diet and the contra-stimulants, among which are bark and bitters, cure other intermittent fevers which would not yield to stimulants, such as opium and wine, and which would even be rendered continued by the latter; these fevers may be

cured without bark, and to render the bark effectual it must be preceded by blood-letting, and associated with contra-stimulating means: the bark administered alone, arrests the paroxysms, but they reappear, the disease not having been eradicated; these are the fevers which he denominates *hypersthenic;* 4th, that there are intermittents of a character diametrically opposite, in which blood letting, emetics, purgatives, not only do not succeed, but even aggravate the fever, and that they cannot be cured except by stimulants, such as opium and wine, or stimulants combined with bark; in these fevers the bark given alone would occasion interminable diarrhœa; these are the *hyposthenic* fevers; finally, he thinks that certain intermittent fevers, caused by the inges-tion of gross aliments, cannot be arrested except by the expul-sion of the indigestible substance which occasions them; he has never seen cases of this character, but he believes in their oc-currence on the testimony of respectable observers: these are the *irritative* fevers.

Bark, according to M. Tommasini, is not anti-febrile, but ra-ther an anti-periodic; he by no means regards it as the specific of intermittent fevers, since he accords the power of curing them to blood-letting, diet, change of habits, to all the bitters, to the excitants which he calls contra-stimulants, and even to those which he calls stimulants.

With regard to the morbid states with which intermittent fe-vers are connected, he says, that among them there are some which do not determine any organic alteration, notwithstanding the repetition of the paroxysms; that others occasion by this re-petition local congestions, which may remain after the fever; that some have for their cause an analogous morbid condition which continues after them, and destroys the patient a long time after the cessation of the fever; and finally, that in others there exists no ancient morbid condition of the viscera to which we may attri-bute the fatal termination of the disease; that death is determined either by an excess of stimulus, as in pleuritic or soporose per-nicious fever; or by the last degree of depression, as in the algic, syncopal and sudatory pernicious fevers.

Justice forbids us to apply the rules of criticism to these pa-thological and therapeutic opinions, before they have been pub-lished and developed by M. Tommasini.

CHAPTER XIII.

Of Erratic, Anomal, Partial and Masked Intermittent Fevers.

THE paroxysms which characterize intermittent fevers, do not always return at fixed epochs: they are sometimes observed to be separated by very short intervals, at other times by very long ones; in the latter case they are very seldom pernicious: this irregularity of type most generally indicates that the disease which then assumes the name of *erratic intermittent fever*, will be tedious and difficult of cure.   The bark is here less efficacious than in intermittent fevers of a regular type; it is especially by a total change of habits, of the manner of living and of the regimen that we must seek to restore the health.   In this respect we cannot establish other rules than those which have been laid down in the course of the present work, when discussing the diverse indications which intermittent fevers may present. It is especially when these fevers are irregular or erratic that they pass into the chronic state.

Cases have been mentioned in which one half of the body, determined either by a horizontal or vertical section, was affected with a rigor, while the other half was affected with an intense heat; other causes have been cited, in which the rigor, the hot and sweating stages, pursued their courses simultaneously; we are assured that the cold sometimes succeeds the hot stage, (*fievres anomale.*)   Finally, the cold, the hot and the sweating stages sometimes manifest themselves only in a single member, the feet, the hands, or even on one side of the head, (*local, partial* or *topical fever.*)

Without attaching too much importance to these rare cases, may we not say that nature presents them to us as it were to prove that the type merits but a secondary attention; that the character of the symptoms is a much more important object of

attention, with a view to discover the nature of the lesion which they announce, and the seat of this lesion; and, that if the intermission is to be taken into consideration, it is only because experience has demonstrated that we should seize this favourable instant for the employment of powerful curative means?

In a work which will always be read with profit,* Frederick Cassimer Medicus has collected all the cases of *periodical lesions without fever*, reported in the works of his cotemporaries and predecessors; among these, are cases of apoplexy, epilepsy, trembling, stupor, insomnolence, chorea, mania, hypochondriasis, hysteria, syncope, cold, heat, sweat, cutaneous eruption, icterus, cyano-dermia, lassitude, dropsy, paralysis, cephalalgia, vertigo, ophthalmia, blindness, ophthalmo-dynia, sneezing, epistaxis, redness of the nose, coryza, odontalgia, alveolar hemorrhagy, ulcer of the gums, aphonia, laughter, buccal hemorrhage, ptyalism, otalgia, deafness, loss of memory, distortion of the features, luxation, asthma, cough, hemoptysis, pleuro-dynia, cardialgia, hiccough, hæmatemesis, boulimia, want of appetite, thirst, or want of thirst, vomiting, diarrhœa, colic, hemorrhoids, nephralgia, retention of urine, diabetes, hæmaturia, gonorrhœa, pruritus of the vulva, abortion, umbilical hemorrhage, tumefaction, with throbbing in the hepatic region, ulcer on the penis, on the finger, hemorrhage from the toes, the fingers, or the knee, pains in the arm, erysipelas, cramps, &c. Let it not be thought strange, that I should cite this long list of intermittent diseases, or symptoms; I do so with a view to demonstrate that there is scarcely any morbid phenomena, or any disease which may not return periodically, or any organ which does not sometimes become the seat of a periodical derangement. In reading the work of Medicus, and the scientific annals of a more recent date, we are impressed with the conviction that intermittent diseases are much more frequent than they are generally thought.

When we discard all preconceived opinions, and attentively consider the subject of periodical diseases without fever, the question naturally presents itself—what has caused these diseases to be considered as *masked fevers*, instead of being compared in the first place with continued diseases of the same na-

* Traité des Maladies Periodiques sans Fievre, traduit de Lallemand par Lefebvre de Villebrune. Paris, 1790, in 12mo.

ture, and, in the second place, with pernicious fevers which do not differ from the first, except in this, that they ordinarily commence with paroxysms unattended with immediate danger, and are accompanied with sympathetic phenomena called *febrile*. It would then have been perceived, that benign and pernicious intermittent fevers do not differ from intermittent diseases without fever, except that the local irritation which constitutes the latter does not give rise to sympathetic phenomena in the same manner as the local irritation, more or less intense, more or less extended to several organs, and more or less shared by the stomach, which constitutes intermittent fever.

I have just said that pernicious fevers *generally* commence with benign paroxysms, and are *generally* accompanied with sympathetic phenomena; because, in fact, these diseases may manifest themselves from the first, with the formidable train of symptoms which characterize them, and sometimes be marked by no febrile symptom: in this case, it is difficult for the most skilful to determine whether there is pernicious intermittent fever, or pernicous intermittent disease without fever; for it is generally admitted, that masked fevers may be pernicious. These pretended fevers are themselves occasionally accompanied with some febrile symptoms, according to Medicus; a circumstance which increases the perplexity of this involved theory.

The denomination of *masked fever* is so little appropriate to the diseases which it designates, that even in the ancient pyretological theory, it must have appeared ridiculous to men of intelligence. This denomination should then be banished from the medical vocabulary, or only remain as a monument of error.

To demonstrate that periodical diseases have a certain affinity to paroxysmal fevers, Medicus calls the attention to the striking analogy of the symptoms of the first, to the symptoms of pernicious fevers, the transition of these diseases into each other, their intermittence, the lateritious sediment of the urine observed in both, and the necessity of submitting both to the same curative means. Periodical diseases without fever are seldom cured, except by bark. We must then admit with Sydenham, Van-Swieten, Huxham, Dehaen, Stoerk, Lautter, and Medicus, that these diseases are of the same nature, but far from concluding that periodical local diseases, without febrile symptoms, are *masked fevers*, that is to say, (in the language of most physi-

cians,) general diseases, disguised under the form of local diseases: we must avail ourselves of this luminous classification, as a strong argument in favour of the new doctrine, which considers fevers of every type as groups of symptoms, occupying, apparently, the whole body, but in reality, produced by a local irritation.

" Most periodical diseases," says Medicus, " have their cause in the abdomen, and especially in the stomach and intestinal canal: an excessive irritability of these viscera, is the first cause of them; it is in the correspondence of the stomach and intestines with the other parts of the body, that these diseases originate; medical experience, and post mortem examination, have proved to me that it is most frequently in the abdomen, and not in the part affected with pain and disorder, that the visible cause of the disease exists.

If Medicus had not mingled these profound views with hypothetical opinions, with regard to the influence of the bile and phlegm, and if his works in pathological anatomy had been more satisfactory, how greatly would he have accelerated the progress of pathological physiology! But, however he may have restricted his opinion with regard to the seat of these diseases, it is not correct to assert, that most of them have their seat in the digestive organs. How often do we see them cease, under the influence of direct local means. Medicus himself says, that Rabner cured himself of a hemicrania, from which he had suffered for five years, by applying leeches to the suffering part. If gastro-enteritis is very frequent in benign intermittent fevers, and even in pernicious fevers, it is much less frequent in periodical diseases without fever: it is in this particular that the former differs from the latter; and it is on this account that the bark is almost always employed with impunity in *masked fevers*, which are not seated in the stomach.

A complete history of intermittent irritations and inflammations, simple, and especially complicated, acute and chronic, with or without sympathetic symptoms, is still a desideratum. M. Broussais, from whom it might have been expected, has not even attempted to trace that of intermittent gastritis.

CHAPTER XIV.

Of Remittent Fever.

AMONG pyretologists, some have omitted remittent fevers, and some have confounded all continued fevers under this name; others, with more propriety, have restricted the latter denomination to continued fevers, which present exacerbations; and they have called those *remittent fevers*,* which in an uninterrupted course present paroxysms analogous to those of intermittent fevers.

According to Stoll, remittent fever should be considered as composed of two fevers, into which it should be separated as into its two elements: the continued and intermittent, both of which being produced in the same individual at the same time, by the same or different causes, by the nature of the epidemic, by the method of treatment, constitute the remittent. Pinel remarks with much sagacity, that this mode of viewing the disease is erroneous, and that it may exercise a dangerous influence upon the treatment, by giving rise to the opinion that the intermittent part of the disease may be attacked directly by bark, to render the continued part more simple. Baumes considers remittent fever as a mixed kind of pyrexia, forming a shade between continued and intermittent fever; belonging, however, more particularly to the latter. Thus he approximates to the sentiment of Stoll, while he endeavours to differ widely from him. Baumes thinks that we should consider as remittent fevers even those, the return of which, nearly periodical, are not, or are no longer announced by a rigor: he adds, and this opinion is remarkable, that between the remittent and intermittent fever the difference is only in degree. Finally, the same author thinks, with Laut-

* These fevers have been variously designated by the names of paroxysmal, sub-continued, *exacerbantes, proportionnees.*

ter, that the exacerbation or paroxysm, and the remission should
be spontaneous, to constitute remittent fever. However scholas-
tic this idea may appear, it is, nevertheless founded upon obser-
vation.   All continued fevers would be remittent, if we desig-
nated thus all cases in which there supervenes an exacerbation, .
or even a paroxysm, because the patient has been exposed to cold;
or a remission, because he has been bled.

Continued fever becomes remittent, when we observe the fol-
lowing symptoms:

Before the paroxysm, heavy, unrefreshing, or interrupted
sleep, mouth foul on awaking, pain, or simply weight of the
head, eyes heavy, or red, and dejected, sadness, disgust, disa-
greeable sense of heat, felt principally in the palms of the hands,
and soles of the feet.

In the paroxysm, malaise, sense of great lassitude, of tension
in the muscles, of rigidity in the articulations, a movement of ex-
tension in some, and of tension in others, a more or less irresisti-
ble inclination to sleep, paleness and lividity of the nails, coldness
of the end of the nose, and tips of the fingers, difficult respiration,
painful inspiration, frequent pandiculation and yawning, sensa-
tion of cold on the skin at intervals, obtuse pains in the limbs,
universal trembling, chattering of the teeth, paleness of the face
and lips, somnolence, and sometimes slight delirium, small dry
cough, considerable thirst, with dry, clammy, or bitter mouth,
frequent desire to urinate, urine scanty and pale, sometimes tur-
bid, pulse small, frequent, wiry, occasionally convulsive move-
ments, great anxiety; when the patient is very irritable, impa-
tience.   This period declines insensibly; the rigors, trembling,
and convulsive movements by degrees become less frequent; the
pulse is alternately developed and concentrated; slight flushes of
heat interrupt the sense of chilliness; copious vomiting super-
venes; sometimes there is a kind of syncope, a mild and general
heat succeeds, and the pulse becomes decidedly accelerated; the
nausea and vomiting generally cease, and the urine flows; some- .
times, though not so frequently, it is red and hot; the patient is
hot and uncovers himself, the face is red, the breath is hot, the
eyes brilliant, the skin dry and hot, the thirst excessive, the res-
piration less embarrassed, but more frequent, the pulse full and
strong, equal, or frequent and quick, the pulsations of the tem-
poral and carotid arteries are sensibly felt, and sometimes very

marked delirium supervenes; sometimes pimples make their appearance, or a red eruption resembling urticaria; pains of the back, loins, joints, and head; all the symptoms increase in intensity during a certain time, and continue at the highest state of intensity for a longer or shorter period; then the alternation or diminution, and return to a state of violence begins to occur; afterwards the symptoms decline, the skin is by turns dry, burning, temperate, and moist; it then becomes soft and perspirable; the urine flows abundantly; it is of a citron colour, thick, sedimentous, sometimes depositing a lateritious sediment, the perspiration is re-established; sweats or bilious stools, and sometimes both, terminate the paroxysm.

After the paroxysm, the patient experiences a melioration of his condition; he sometimes even believes that the disease has ceased: with the exception of a painful sense of fatigue, of bitterness of the mouth, fetor of the breath, some remaining heat of the skin, and a disposition to rigor, we observe all the symptoms which existed before the commencement of the paroxysm.

Such is, according to Baumes, the description of an intense and well characterized remittent fever; it is the same as that of intermittent fever. Consequently, the remarks which have been made with regard to the latter are applicable, in this respect, to the remittent fever. But Baumes has not confined himself to the description of benign intermittent fever; he has pointed out the symptoms of that which presents a character of malignity; he has described the pernicious remittent fever, which has been passed over in silence by most of our cotemporaries.

"From the commencement of this fever," he remarks, "the pulse is soft, weak, small and profound, often unequal; the principal symptoms are nausea, obstinate vomitings, cardialgia, anxiety; serous, bilious, very liquid diarrhœa; swelling of the face, deafness, somnolence, deep pains, delirium rather tranquil than furious, lethargic affection, difficulty of respiration, meteorism of the abdomen, uncertainty of the movements. In some epidemics, only, the pulse is of considerable violence. Before the paroxysm commences the patients are depressed, suffer from vertigo, and are threatened with fainting. Great coldness suddenly supervenes, with pains which appear to come from the spinal marrow; the pulse is deep, and its vibrations, which are scarcely sensible, are confused; the patient, motionless and cold, experi-

ences weight of the epigastrium, and vomits green bile.   After-
wards an acrid heat is developed, and the pulse rises slowly;
then, even when it rises, it is more weak, soft and small than in
ordinary cases, and it retains its irregularity; the skin is rough,
dry and hot, and its heat of a more biting (*mordicante*) charac-
ter than in continued fever, and is not covered with sweat until
after the lapse of ten, twelve or fifteen hours.   After the parox-
ysm the fatigue is extreme; there remains an impression of heat
in the mouth and interior of the body; the pulse is still similar
to that of the access, or it is less frequent than the natural pulse;
there is a discharge by the mouth and anus of serous, bilious,
green and fetid matters.   The following paroxysms occur at
shorter intervals, and manifest greater violence; the morbid phe-
nomena increase in intensity, and after the fourth, fifth or sixth
paroxysm, the remission is scarcely perceptible; the disease has
assumed the continued form, and has acquired an extreme vio-
lence; the urine is limpid: the life of the patient is in the great-
est danger.

Baumes has sagaciously remarked that all these symptoms are
far from being constant in their occurrence either in the benign
or in the pernicious remittent fever; and that sometimes the re-
mission in consequence of the calm of the circulation may be
mistaken for an intermission, if the state of the pulse be alone
regarded; but when all the circumstances of the patient are con-
sidered, it is not difficult to distinguish the remission from the
intermission, except in certain cases, in which the disease is equi-
vocal; for nature sports with all our classifications without ex-
ception.   Baumes thinks, besides, without appearance of reason,
that the number of pernicious remittents is greater than that of
pernicious intermittents; but, to pronounce on this subject, it is
necessary to be in possession of a series of well observed facts
and nosological tables, kept with care in all the countries in
which pernicious fevers prevail.

There are, according to Baumes, three sorts of remittent fe-
vers.   The first comprehends all fevers the paroxysms of which
commence with a rigor; the second comprehends all those the ex-
acerbations of which commence either by coldness of the whole
body, or only by a coldness of the extremities, or of the nose,
or by a dry and more or less sharp cough; the third compre-
hends all those, the paroxysms of which do not exhibit in their

commencement either rigor or partial coldness, and are remarkable only for the exacerbation of the fever and the augmentation of the acrid heat, and other febrile phenomena, which decrease after having risen to their highest degree of intensity.

The first or the first and second paroxysms of remittent fever, of the two last kinds, commence with a rigor which is generally considerable, and all the paroxysms terminate by sweating and the discharge of sedimentous urine. Fevers of the first kind more nearly resemble intermittent than continued fever, but the reverse is the case with those of the third kind. As it respects danger, Baumes distinguishes remittent into *benign, less benign*, when the paroxysm is attended with delirium, oppression, a distressing cough, moderate meteorism; and *grave*, when there supervene in the exacerbations, faintness, syncope, or a phrenitic delirium, or a soporose or apoplectic affection; convulsive movements, a considerable or painful meteorism; symptoms of pleurisy, of pneumonia, hepatitis, dysentery, of an inflammation of the abdomen, and when the pulse becomes soft, small, and unequal. With regard to the inflammatory symptoms, they are the effect of the fever, if they are subordinate to it, that is to say, if the fever has manifested itself without them, if they have not appeared until the second or third paroxysm, or even at a period somewhat earlier, if they have no traces or only very obscure traces in the remission. If, on the contrary, the inflammatory symptoms have appeared before the fever, or at the same time with it, if they continue with rigor during the remission, the fever is subordinate to the local inflammation, or it pursues its course simultaneously with it. In consequence of this distinction, Baumes divides remittent fevers into encephalic, soporose, hepatic, pleuritic, dysenteric; and he reports the history of a pneumonic remittent fever, which he observed during the autumn of 1782.

It is evident that this exact account of the ancient opinions with regard to remittent fevers, so ably given by Baumes, presents the history not of an acute febrile remittent disease, but of the *remittence* of acute diseases of a febrile character; that is to say, attended with disturbance of the circulation. In this description we find enumerated all the phenomena observed in continued and intermittent fevers, with the same variety of intensity and a new combination. We have a mixture of the symp-

toms of acute irritation and disorganization of the brain and its
membranes, of the stomach, the intestines, the peritoneum, the
lungs, the pleura, the heart, and, in a word, of all the viscera.
These affections give rise to remittent as well as to continued
and intermittent fevers; they are irritations and inflammations
occupying one or more organs, and appearing to the eyes of a
superficial observer to invade the whole organism, some of the
phenomena of which are permanent and others periodic; so that
the disease might be said to recommence more or less frequent-
ly without having, however, ceased for a single instant.   It may
be readily perceived that such a state must always be very seri-
ous, provided it is at all prolonged.

As remittent fevers have been considered as composed of a
continued and intermittent fever, they have always been regard-
ed as resulting from the causes which produce both, but espe-
cially from those which give rise to the latter.   As these causes
have already been mentioned, they shall not be repeated here.
We shall only mention, as meriting the attention of observers,
the opinion of Alexander, of Chiannini, and of Ramel, who think
that fogs and the extreme atmospheric humidity of marshy coun-
tries produce periodical fevers.   Without denying, with them,
the existence of marsh miasmata, which, however, is not well
demonstrated, it is certain that this humidity, especially in con-
sequence of the heat which is joined with it, must have a very
considerable effect in the production of diseases which affect the
intermittent or remittent type.   Baumes thinks that humidity
is not sufficient to produce this effect, and that it can only give
rise to simple cachexy and hemorrhage; but he forgets that, be-
sides this cause, there exist all those which are capable of irritating
the viscera, and that intermittence and remittence are perhaps only
derived from the state of the skin, which is incessantly macerated,
so to speak, in a humid and hot air: we know that a diminution of
action in one organ, predisposes the others to active congestions,
to an afflux of blood.   All this is in favour of the opinion of M.
Roche, with regard to the cause of intermittence.

M. Robert Thomas says, that in post mortem examination of
those who die of remittent fever, we generally find congestions
of blood in the liver, inflammations of the digestive passages,
and alterations of the brain.

I have opened, or seen opened, in a practice of forty-five

years, many persons who had died of fevers, and have always observed congestions in the viscera which are naturally sanguine, collections of bile or mucosity in the apparatus of biliary and intestinal organs. These disorders were generally accompanied with sanguine, serous or mixed sanguinolent, or sanious effusions; the membranous organs were often thickened; the parenchymatous organs were either renitent or soft, filled with granulations which were likewise found in the affected membranes: finally, the internal surfaces sometimes tearing with considerable facility presented either the net-work of vessels which entered into their formation strongly distended, and as it were injected or large red spots, occasionally blackish points or true eschars. He adds, that the disorders were principally observed in the head when the air had been cold and dry; in the abdomen when it had been dry and hot; in the chest when there had been rapid alternations of heat and cold, of dry and damp weather, with a predominance of dryness.

Baumes, then, acknowledges that the same morbid traces are detected after remittent and continued fevers. M. Bailly has recently proved at Rome, that the traces are also the same after pernicious intermittents; consequently, the identity of the seat and nature of these three orders of fever is demonstrated.

Remittent fevers are more frequently quotidian than the intermittents; they are less frequently tertian; they are sometimes double tertian, and seldom quartan: according to Sauvages, Colombier and Baumes, every sub-intrant fever is remittent; it is certainly difficult, in such a case, to determine whether the disease is remittent or intermittent. Baumes thinks that the double quotidian and most other double intermittents, should be considered as remittents. Such are the difficulties and subtleties in which we are involved, when we attach too much importance to the type of diseases, and when we make special and distant affections of diseases, the types of which differ, although the phenomena are the same in both.

Baumes admits remittent fevers, with inflammatory, putrid or nervous tendencies, with a catarrhal, bilious or gastric state. Pinel questions the existence of an inflammatory remittent fever, admitted by Macbride, but he admits a gastric remittent fever.

The diseases of this kind which Pinel observed affected old men; they occurred in the Salpetrière, and they appeared towards

the decline of autumn; they were produced by all the causes, physical and moral, of fevers: like gastric continued fevers, they were characterized by supra-orbitar headache, a mucous or yellowish covering of the tongue, a sense of bitterness in the mouth, with pain of the epigastrium. Who can mistake here the symptoms of gastro-enteritis, especially if we add to them, as he does in several cases, diarrhœa or constipation, of a more or less obstinate character, and continued vomiting. Even when skilfully treated, they prolonged themselves, he remarked, even to the fortieth or forty-second day, and sometimes terminated towards the end of the second week.

Pinel described, likewise, a mucous remittent fever, characterized by the frequent return of abdominal pains, a painful discharge of urine, a sort of salivation, a mucous tongue, horripilations in the night, augmented heat often interrupted with rigors, apthæ, paroxysms which, towards the decline of the disease, degenerate into simple exacerbations. The duration of diseases of this kind, is not shorter than that of gastric remittent fevers. He, with reason, refers the hemitritœa of the ancients, and of Spigel, to the mucous remittent fever. He admits incidentally, that the adynamic fever may be remittent, and considers as such, many pretended cases of adynamic intermittent fever. We have frequently observed gastro-enterites with symptoms called adynamic, and well characterized exacerbations, preceded by a cold stage of little intensity and followed by sweating which was neither very copious nor very hot. Pinel has classed with atax- ic fevers, pernicious remittent fevers, called sub-intrant, because their paroxysms encroach upon each other. These diseases are more dangerous than pernicious intermittents; it is much to be desired that some physician having charge of a hospital in a country in which these diseases prevail, should *produce* an anatomical and clinical history of these diseases, equally elaborate with that of Torti, with regard to their symptoms and therapeutics.

We shall dwell no longer on the causes, symptoms, nature and seat of remittent fevers, and we request the reader to apply to them the remarks which have been made with regard to the nature and seat of continued and intermittent fevers. We should only add, that if intermittent fevers sometimes become remittent, the latter frequently become continued. We have very lately

observed this series of transitions in a female, who presented all the phenomena of a hepatitis, at first intermittent, and successively remittent, continued, and again intermittent.

Remittent fevers of little intensity, are only dangerous in consequence of their tendency to provoke profound and apyretic alterations in the viscera; they seldom threaten the life of the patient; they often resist with obstinacy every kind of treatment, and do not cease until after the lapse of a month or six weeks. Intense remittent fevers are, on the contrary, very dangerous; they threaten immediately the life of the patient, and often prove fatal in a few paroxysms.

Blood-letting sometimes, emetics and purgatives often, bark always: such is the treatment generally recommended against well characterized remittents by authors who have adopted, without modification, the opinions of the ancients. We have seen above, that Pinel combated the opinion of Stoll, because it led to the prodigal employment of bark in remittent fevers: Pinel recommends the same treatment in these fevers as in the continued type; he, however, advises, in consequence of their great duration, to sustain the strength of the patient with wine and water, rice and barley-water, cooked fruits, beer mixed with an equal quantity of water; it is not until the decline that he recommends tonics, wine of wormwood, extract of juniper-berry and more substantial nourishment. With regard to ataxic remittents, which are almost always tertian or double tertian, he recommends, after the example of Torti, the employment of bark as in ataxic intermittents.

Remittent fever may, in our opinion, be with advantage distinguished into two species: the first species comprehends those cases, which are attended with no symptoms of imminent danger and the other comprehends those in which the paroxysms approach each other, and become more and more alarming, in consequence of the lesion of the nervous system, and especially of the encephalon which characterizes them. To the first, we assign the name of benign, and to the second, that of pernicious, in the same manner as in intermittent fevers, and without attaching any particular importance to these denominations.

Benign remittent fevers should, according to Pinel, be treated in the same manner as analogous continued fevers; but this author did not perceive that the existence of paroxysms required

particular attention, and that it was important to abridge the long duration of these diseases, with a view to prevent the obscure and chronic phlegmasiæ, which frequently follow them. Stoll asserts with reason, that we should pay more regard to the continued symptoms, than to those of the paroxysms, except when the latter present the pernicious character; that remittent fevers should not all be treated according to the same method; that blood-letting may be useful, while, on the other hand, the bark converts a remittent fever into a continued, a grave or ardent fever, when the paroxysms do not announce any imminent danger.   These remarks should be understood as relating only to the impropriety of a treatment adopted, with the view of putting an end to the paroxysms by bark alone; Stoll may with advantage be opposed to Torti and Baumes.   But we must not hence conclude that we should renounce every remedy but bark in the course of the paroxysm, with the view of abridging the latter, rendering them less intense, and preparing the return of the disease to the continued type.   Experience has demonstrated to us, since the first publication of this work, that we must combat with energy the paroxysms themselves, in the same manner as we should act in case of a complication supervening in a continued disease.   There are, then, two sources of indications in the present diseases—the remission and the paroxysm.

During the remission we must act precisely in the same manner as though the disease were continued, or at most, had only simple exacerbations of little intensity; it is consequently unnecessary to repeat here what we have said; and what we shall say of the treatment of continued fevers.   But we should here remark, that it is never proper in benign remittent fevers, to administer the bark during the remission, unless we have previously, by the employment of emollients and the local abstraction of blood, converted the remission into a true intermission, an event of frequent occurrence, when we employ the antiphlogistic treatment. Otherwise, we incur the danger of converting a benign intermittent fever into a grave continued fever. When it has been judged expedient to abstract a large quantity of blood during the paroxysm, it is proper to permit the patient to enjoy complete repose during the succeeding remission, and only to employ emollients internally, with sometimes an evacuant lavement, or a rubefacient applied to the skin, if the circulation is not perceptibly accelerated.

It was in the remission that emetics and purgatives were for-merly administered; they may be advantageously used when the remission has been replaced by an intermission: in this case, they are sometimes useful in persons of little irritability; this, at least, may be said of purgatives, for emetics more frequently provoke than cure remittent fevers. This fact is very important, and should not be forgotten.

During the paroxysm we should employ the same treatment as in a continued fever which had attained its highest degree of intensity. This principle has not hitherto been laid down with sufficient distinctness; but there is an important distinction to be made, viz. that in the cold stage we must act as though we were treating a disease at its commencement, and it is only in the hot stage that we must resort to the active treatment which we have recommended; whilst, in the sweating stage, the only thing ne-cessary is to prevent the patient uncovering himself incautious-ly, becoming cold, eating; in one word, prevent his deranging in any manner the movement from the centre to the circumfe-rence, which should be favoured by some agreeable warm drink, given in very small doses.

During the intensity of the paroxysm we must study which is the organ most affected, the lesion of which is most hazardous to the patient, or, at least, presents the most prominent patholo-gical condition; we must then resort to the most natural means, which are clearly indicated in gastritis, enteritis, hepatitis, arach-nitis; in one word, against the irritation which gives rise to the symptoms of the paroxysm.

Pernicious remittent fevers should be treated according to the same principles, with this difference, that when the antiphlogistic means have been employed with promptness and decision, in the hot stage of the paroxysm, the bark should be given in the re-mission, if the danger is urgent, the life of the patient threat-ened, if there have been already two, three, much more if there have been four pernicious paroxysms. This is the most difficult case in practical medicine. This method succeeds very well when the irritation which constitutes the paroxysm exists only in the encephalon. When it is recent, and when the digestive passages are but slightly, or not at all irritated; perhaps, like-wise, when the irritation is seated any where else than in the di-gestive passages, though it may occupy an abdominal organ. It

has been likewise observed to succeed in cases in which the gas-
tro-enteritis was still manifest during the remission.   The folly
which does not comprehend, and the improbity which misrepre-
sents, have accused us of denying cases of this kind.   A fact is
more precious in our eyes than the most laboured theory; and,
if we attach importance to theory, it is only on account of its
connexion with practice.   We repeat, that it is not more asto-
nishing to observe the cure of gastro-enteritis, in consequence of
the application of bark to the stomach, than to see an ophthal-
mia cured by the application of a collyrium of alum, an erysi-
pelas by the application of a blister, a boil by the application of
citric acid, a urethritis by the injection of sulphate of zinc; but
we have never said that bark acted as a blister; we know that
the bark does not cause the removal of the epidermis, especial-
ly where it does not exist; we know that this substance is not
an excitant—an evacuant phlegmasick—but rather a tonic, a de-
siccative phlegmasick, a tannant, and that one or another of these
effects predominate according to the state of the organ and the
individual predisposition.   Nothing is more unworthy of a man
of sense and information than to attribute to a single medicine
the absolute quality of a febrifuge, an anti-periodic, when it has
been demonstrated that this substance, in cases in which it ap-
pears to be most decidedly indicated, sometimes increases the
fever, and that by giving it during convalescence, in the days
corresponding to those of the paroxysms, it reproduces them,
as Baumes has said, and as we ourselves have remarked.

However imposing may be the authority of Torti, there is cer-
tainly danger in incautiously prescribing the bark in pernicious
remittents, because this medicine often aggravates benign inter-
mittents, which yet present an apyrexia of sufficient duration,
and still more sub-intrant benign intermittents.   Ramazzini has
observed epidemic intermittent fevers in which the bark was
more dangerous than useful, doubtless because the digestive or-
gans continued irritated in the apyrexia: much more, conse-
quently, may this medicine be injurious when it is administered
without preparation in remittent fevers.   We formerly said that
these fevers often resisted, or yielded only temporarily to blood-
letting; but this is in consequence of our not having recourse to
this measure, except in the remission: since we have practised
it, at the instant when the paroxysm is in its highest degree of

intensity, we either abridge it considerably, and the following remission is frequently a true intermission, which permits us to administer the bark, or the paroxysm diminishes only in intensity, and the patient has now only a continued fever, which we must combat by the application of leeches at the time of the simple exacerbations, which take the place of the paroxysms.

The existence of remittent fevers, forming so natural a transition from continued to intermittent fevers, presents an insurmountable obstacle to the adoption of any theory in which intermittent fevers are considered as being of a different nature from continued fevers: otherwise we must suppose that remittent fevers are of two different natures at one time, or of two alternating natures.

CHAPTER XV.

Of Chronic Fevers.

FEVERS, whatever be their type, often prolong themselves during months, and even years, but not always with the degree of intensity which they present when acute. Before passing to the chronic state, continued fevers seem to cease altogether, or else some of their symptoms persist after the immediate danger has passed. Intermittents, in passing to this state, do not always become on this account less intense; but frequently the paroxysms do not appear at periods equally definite, as in the commencement of the disease. A continued acute fever is sometimes followed by a chronic intermittent fever, which towards the fatal termination generally resumes the continued type.

The name of *Splanchnic* has been given to chronic intermittent fevers which are accompanied, or rather which are occasioned, by a manifest lesion of one of the abdominal viscera.

When chronic fevers have continued for a long time, and sometimes even in the first weeks of their existence, whatever be their type, a remarkable diminution of strength is observed, and an emaciation, which generally proceeds with rapidity: these fevers are then called *hectic.*

Debility and marasmus are more rapidly established in continued chronic fevers, which more readily assume the name of hectic fevers; it is different in chronic intermittent fevers, the paroxysms of which, separated by intervals more or less considerable, allow, at least for some months, a renewal of the strength and nutritive materials.

The time during which the strength remains unimpaired, and the body free from emaciation, in chronic continued fevers, has been but little investigated. It was by fixing his attention upon this important subject of observation, that M. Broussais recog-

nised the distinctive characters of several phlegmasiæ, of which he has given the history in his important work upon these inflammations. I cannot do better than to refer the reader to this immortal production, which is one of those books which will survive through all ages. We are indebted to the same author for a history of hectic* fever, superior to the work of Truka upon this disease.

M. Broussais defines hectic fever—a continued slow fever, of a long and indeterminate duration, with consumption of the forces, and emaciation; and, to complete the symptoms of this morbid state, he adds the following characters: "Febrile movement, slow and continued, with exacerbations in the evening, most frequently after eating; sometimes of an irregular character, during which the patient experiences a sense of heat in the palms of the hands and soles of the feet, and after which they have abundant sweats, which debilitate them greatly; emaciation, more or less rapid in proportion to the activity of the fever, and the abundance of the sweats and diarrhœa." He admits three degrees or periods of this fever: in the first it is obscure, irregular, and the functions but little altered; in the second, the pulse, which is always small, quick, and frequent, becomes accelerated in the exacerbations, during which heat of the hands and feet manifests itself, and copious and debilitating sweats occur; the emaciation is then rapid: finally, in the third, all the symptoms are very intense, and the emaciation is carried to the degree of marasmus; the patient resembles a skeleton, covered with a dry and clay-coloured skin.

This author distinguishes hectic fevers, derived from a lesion of the action of a single system, from those which depend upon a lesion of action in several systems. This division being founded upon an incomplete analysis of the phenomena and causes of the disease, an analysis, the defective character of which M. Broussais has himself recognised, I shall not dwell upon it. But among the different species of hectic fever which he admitted, when he wrote his Dissertation on these diseases, there are several which are deserving of all our attention: these

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* Researches upon Hectic Fever, considered as dependent upon a lesion of action of the different systems, without organic disease. Paris, 1803, in 8vo.

are the *gastric,* the *pectoral,* the *genital,* the *hemorrhagic,* the *cutaneous,* and the *moral.*

To the first he assigns the following distinctive characters: anorexia, dryness of the mouth, copious secretion of saliva, difficult digestion, accompanied by a sense of weight, eructation, vomiting, cardialgia, præcordial uneasiness; sometimes, he remarks, the appetite continues, or is increased, but the digestion is always laborious. In infants who have just been weaned there is also lienteria, and sometimes boulimia. To these symptoms are sometimes added, bitterness, and a clammy state of the mouth, a yellowish white or mucous coating of the tongue: sensibility of the epigastrium, and supra-orbitar headache. When the disease has been exasperated by improper food, by high seasoning and cordials, the cardialgia and uneasiness are more distressing, and there is a sense of heat at the epigastrium. Sometimes food of the mildest character occasions acute pains, and is often rejected by the stomach. Finally, paleness, dilatation of the pupil, itchiness of the nostrils, acidity of the breath, salivation, pains in the abdomen, mucous diarrhœa, and still more the discharge of worms, indicate the presence of these animals in the digestive apparatus.

These symptoms do not permit us, at the present day, to mistake a chronic gastritis with habitual acceleration of the pulse, and a more or less regular exacerbation of this acceleration. We should, I think, attribute to the same organic cause hectic fevers, arising from prolonged lactation, since the result of this kind of excess is an increase of the digestive action; and, finally, an inflammation of the stomach.

The *pectoral* hectic fever has the following characteristic symptoms: 1st, Sometimes an acute pain in the larynx, a convulsive cough, with redness of the face, fear of sudden suffocation, sometimes ceasing suddenly; the trachea is then the seat of chronic irritation, the proximate cause of this fever; 2dly, Sometimes a strong and frequent cough, an expectoration often purulent and abundant, dyspnœa, a general pain of the chest, a sense of uneasiness and weight under the sternum: the bronchial mucous membrane is then the seat of the irritation which provokes the fever; 3dly, Sometimes we observe signs of the chronic phlegmasia of the pulmonary parenchyma, or of the lungs, upon which it is not necessary to dwell in this work. Thus the pec-

toral hectic fever depends upon a laryngitis, a bronchitis, a pe-
ripneumonia, or, finally, a chronic pleurisy. The signs of gas-
tritis are frequently, though not always, associated with these
inflammations.

The characters of the *genital* hectic, are a discharge of a mu-
cous, whitish, yellowish, or greenish matter, more or less acrid
and fetid, a sense of scalding and pruritus in the vagina and ure-
thra.   Anorexia, dyspepsia, pains at the epigastrium, the loins,
and the thighs, generally accompany this discharge, and indicate
that chronic inflammation of the stomach generally accompanies
that of the genital mucous membrane.   We should class with
this hectic fever, that which arises from chronic inflammation of
the bladder, known under the name of catarrh of this organ.

Hectic, in consequence of excessive hemorrhage, should not
be attributed to weakness, the result of loss of blood.   Every
hemorrhage being the result of an irritation of the bronchial or
gastric mucous membrane, or of some other part, the fever re-
sults from the irritation which is the seat of the hemorrhage.
Hemorrhage from wounds, and considerable losses of blood,
from whatever cause, do not occasion fever except indirectly,
and only when the action of the gastric passages repairs by a
more rapid digestive action, the loss of materials sustained by
the economy.   Hectic fevers succeeding the disappearance or
suppression of periodic or habitual hemorrhages, are the result
of a supplementary irritation, which establishes itself either in
the digestive passages, the lungs, the genital apparatus, and per-
haps in other parts, such as the liver.   The same principle ap-
plies to hectic arising from suppression of the perspiration.   The
fever in which excessively copious perspiration occurs, does not,
on this account, differ from the others; for it is not a single ad-
ditional symptom, nor the intensity of a single symptom which
can establish a fundamental difference between two diseases.

Hectic fever, in consequence of any chronic inflammation
whatever of the skin, sometimes exists with, and sometimes
without symptoms of chronic gastritis: this consideration is not
unimportant, in a practical point of view.

Hectic, arising from a moral cause, is, according to M. Brous-
sais, marked by the following symptoms: a sad and morose air,
aversion to society, the predominance of some particular idea,
a neglect of the duties of life, and even a neglect to satisfy the

wants of nature; we, likewise frequently observe palpitations, mournful sighs, tears, a profound alteration of the features and pulse, if the patient be suffering from nostalgia, and his country or persons dear to him are made the subjects of conversation. This fever, evidently, depends upon a cerebral irritation, accompanied or not by gastritis; but, to complete the picture, we must add to it all the characteristic signs of melancholy, epilepsy, and catalepsy, which are often accompanied with the symptoms common to all hectic fevers.

I shall not pursue farther the exposition of the phenomena, so variously presented by subjects affected with hectic fever. It could easily be demonstrated, that there is not a single organ, however unimportant, which may not, when it is the seat of a chronic inflammation, give rise to the symptoms of this fever.

I shall not enter upon an investigation of the causes of hectic fever; they are those of all chronic inflammations: like those of acute fevers, they never act at the same time upon the whole economy, nor do they always involve the gastric mucous membrane, although this membrane most frequently feels their influence.

Death is necessarily the natural termination of the hectic fever, unless a happy change supervene either spontaneously, or in consequence of medical treatment. It is always more difficult to cure than acute fevers, with the exception of the adynamic and ataxic, and the facility of its treatment must always be in proportion to the attention with which the nature and seat of the organic lesions, always local, which occasion it, are studied.

The subject of M. Broussais' thesis, was the hectic fever, independent of any irremediable lesion in the structure of the organs; on this subject, it is not possible to establish rules of a very positive character. All that can be said, is, that the case is not hopeless as long as the patient is not reduced to the last degree of marasmus, and is free from a dropsy or diarrhœa, which would carry him off in a short time.

The distinction which M. Broussais has thought proper more recently to establish between the hectic of *pain* and the hectic of *resorption*, appears to me of little utility and of doubtful propriety. When an organ which has undergone a profound alteration in its tissue, begins to suppurate, hectic fever becomes aggravated; when the pus does not find an issue externally, it forms a new cause of irritation, and adds to the intensity of the fever;

finally, when the introduction of air into the focus of disease adds anew to the irritation, the fever becomes still more intense: upon these facts the distinction of M. Broussais is founded. The diarrhœa which so often attends the last period of hectic, always depends, as M. Broussais has demonstrated, upon inflammation of the intestines; it is the symptom of a sympathetic inflammation which aggravates the primitive and which precipitates the fatal termination.

On post mortem examination, we almost always discover profound and unequivocal traces of inflammation in one or more viscera. These traces, being profound, the organic tissues entirely altered, destroyed, or in a state of suppuration, the symptoms observed during life, and the death of the patient, are readily attributed to them. There is no hesitation about admitting the secondary or symptomatic nature of the hectic fever. What then should cause a different mode of reasoning when we find similar traces of less predominance, after acute fevers? If there be nothing repugnant to reason in attributing death to a morbid state, which leaves very marked traces after having occasioned phenomena of little prominence, how can we refuse to attribute death to a lesion of the same nature; which leaves, it is true, less profound traces of its existence, but which gives rise to very remarkable though rapid phenomena during life?

There are cases of hectic fever of very unfrequent occurrence, and of which I have observed a single example, in which autopsy reveals no lesion. Must we then conclude, that this fever is owing to the affection of no organ? To draw this conclusion, would be to misapply the researches of pathological anatomy, and to shut our eyes against the lights furnished by the symptoms. These cases are, I repeat, very unfrequent; in most of those which have been reported, it is probable that chronic inflammation of the mucous membrane of the digestive organs, of the arachnoid, or of the brain has existed, although it has escaped observation. Even in the case which I have mentioned, I would not affirm that the arachnoid was free from lesion, for at the time when I saw the case I was but little acquainted with certain pathological states of this membrane. We know, at the present day, that nostalgia does not occasion death except by superinducing chronic gastritis or chronic inflammation of the meninges; I should add, of the brain likewise, if the signs of chronic encephalitis were better known. Gastric hectic fevers are the

most common; next in point of frequency are the peripneumo-
nic and pleuritic, almost always complicated with the former, es-
pecially in their latter period.

The treatment of hectic fevers caused by chronic inflamma-
tion of the lungs, was but imperfectly known when M. Brous-
sais published his *History of the Chronic Phlegmasiæ.* The
importance of guarding against irritation of the mucous mem-
brane of the stomach, lest inflammation of this membrane should
supervene on that of the lungs, and accelerate the fatal termina-
tion, was not sufficiently understood. The treatment of gastric
hectic fevers was completely misunderstood, because the state of
the internal membrane of the stomach and intestines in these
fevers was imperfectly known. As to the others, the remedial
measures resorted to in them were dictated by a vague idea of
debility. After having paid a tribute to the errors of his mas-
ters, M. Broussais demonstrated, in a superior manner, the ne-
cessity of limiting the treatment of these fevers to the adminis-
tration of diluent, mucilaginous, edulcorated and sometimes aci-
dulated drinks; to suppuratives of the skin and cellular mem-
brane, when these means do not augment the irritation against
which they are employed; to the removal of every irritating
cause capable of affecting, not only the irritated organ, but like-
wise those which are sympathetically connected with it.

At the present day, M. Broussais adds to these simple means,
an exposition of which may be found in his History of the
Chronic Phlegmasiæ, leeches applied in small numbers and more
or less frequently, as near as possible to the inflamed organ.

Such appears to be the general method to be followed in the
treatment of hectic fevers, in addition to the observance of all
the rules of Hygeine, and the severe regimen indicated in most
cases, especially when the digestive passages are the seat of in-
flammation. The success of this method is by no means fre-
quent; but, were bitters and excitants of every kind, formerly
so lavishly prescribed in these diseases, of greater efficacy? Had
they not the disadvantage of neutralizing the good effects of
emollients, the advantages of which were however recognised.
Moreover, to affirm that blood-letting in small quantity, and the
exhibition of emollients should constitute the basis of treatment
in these fevers, is not to exclude the employment of certain to-
nics when the indication presents itself.

I deem it unnecessary to demonstrate the error of certain prac-

titioners, who still persist in the exhibition of bark, in hopes of curing hectic fever when they are totally incapable of operating upon the proximate cause of this disease. They obtain this result only by augmenting the inflammation of the stomach, when this organ is the seat of the disease, or by determining a gastritis when the inflammation resides in another organ. Thus, with a view to the removal of symptoms, purely secondary, they augment the intensity of the primitive disease, or rather they create, so to speak, another disease; a remarkable example of the unhappy results of therapeutic methods founded solely upon the study of symptoms.

When, however, the stomach is free from disease, and when the local symptoms of chronic irritation occupying another organ are but little marked and the subject not very irritable, we may attempt to render the paroxysms less frequent by the exhibition of the sulphate of quinine; but we must direct its employment with a prudent reserve, and remember that we can only expect to palliate the disease and not to cure.

A symptom, the removal of which is often attempted, is the sweat and colliquation of *hectic* fevers, which, it is said, exhausts the patient, and should be moderated because it is not critical. I have seldom seen the means used with a view to diminish or arrest this evacuation succeed, and when they have produced this effect, I have constantly observed an exasperation of the fever, or the local symptoms of the disease. That this abundant and almost continual loss of the nutritive materials of the system contributes to the destruction of the patient, cannot be denied; but, that with a view to oppose it, it is proper to stimulate the gastric mucous membrane is in direct opposition to the principles of sound physiology: experience demonstrates the bad effects of tonic and astringent means in such cases. All that can be done is to cover the body with dry and hot cloths, often renewed, as soon as this symptom establishes itself, and to administer a cold acidulated drink if the state of the stomach and lungs permit.

Since it is proved, that hectic fever is only a collection of the symptoms which characterize a chronic irritation, the sympathetic influence of which extends to the heart, it is only by attacking this irritation that we must combat the sympathetic phenomena which characterize the disease.

It is proper, in a practical point of view, to distinguish two varieties of hectic fever, the one with and the other without gas-

tric irritation; in the second, we may occasionally employ certain stimulants as derivatives, but with great caution, from the apprehension of producing the bad effects which I have mentioned; whilst in the first, that is to say, in that in which the gastric passages are primitively or sympathetically irritated, every attempt at derivation must be hurtful, by accelerating the progress of a disease which tends to destroy the organism.

When, notwithstanding the means used for their cure, and sometimes in consequence of these means, intermittent fevers prolong themselves indefinitely, the digestive functions become deranged, and, if the stomach has not hitherto been irritated, it becomes so, not only in paroxysms but in a continued manner; the gastritis increases at each exacerbation, and becomes every day more intense; signs of chronic inflammation of the liver and spleen manifest themselves; these viscera acquire an extraordinary size, and become painful on pressure: this is what is so improperly denominated *obstructions.* The intermittent fever, as I have already remarked, then assumes the name of *splanchnic.* The patient constantly grows thin and weak; the febrile paroxysms generally become erratic; at other times they return or assume the tertian or quartan type; by degrees they pass to the continued remittent type, especially when the alteration of the tissue of the organs affected tends to suppuration or ulceration. The fever is, however, frequently observed to remain intermittent. It finally terminates in marasmus, which acquires the highest degree of intensity, and the patient dies dropsical or worn out by diarrhœa.

Chronic intermittent fevers present so great a variety, that it is impossible to give a general description of them; there are still important researches to be made upon this as upon so many other interesting points of pathology.

On dissection, we most frequently detect profound alterations in the tissue of the abdominal viscera, in the liver, spleen, mesentery, epiploon, pancreas, kidneys, ovaria and uterus. They are, likewise, found in the thoracic viscera. Traces of inflammation are often found in the peritoneum, pleura, and pericardium. In a word, we detect the same organic lesions, as after chronic continued or hectic fevers properly so called.

By what strange contradiction is it that the same authors, who have attributed the symptoms of chronic continued fever to the affection of the viscera, which, on dissection, were found altered

in their structure, have attributed these same lesions to chronic intermittent fever when dissection revealed them after the latter disease? It is not, we confess, the scirrhus of the liver, nor the friability of the skin, nor the declining of the peritoneum, nor the hydrops pericardii, nor the ascites found after death; it is not, we say, these disorders, which have given rise to the febrile paroxysms; but these alterations indicate that the viscera, in which they are observed, have been the seat of an irritation, of which the febrile paroxysms were but the symptoms, and which has itself determined these alterations of texture.

The author of a treatise on intermittent fevers, attributed to Senac, and all those who have treated of organic lesions presented by subjects after chronic intermittents, have scarcely mentioned the state of the gastro-intestinal mucous membrane, because they were unacquainted with the traces, often slight, which inflammation, even the most intense, leaves in this membrane. The author* just mentioned, remarks that in men who have died suddenly after a meal, when they appeared to be cured of the fever, the stomach has been found very much dilated, and containing water and food; that after prolonged intermittents, the intestines are often much dilated in certain parts of their extent, and contracted in others, that the colon especially presents contractions in its descending portion, a little above the rectum.

The affection of the abdominal viscera, rendered manifest by an analysis of the symptoms and by dissection, although it has not yet been sufficiently studied, demonstrates that when intermittents pass to the chronic state, they necessarily become gastric. If we reflect upon the results of treatment, we shall readily find proofs of this assertion; who does not know that these fevers are generally attacked in vain by bark?

One of the most interesting problems in pathology, is, doubtless, to discover what principles should direct the practitioner in the treatment of intermittent fevers, with a view to the prevention or cure of the *obstructions?*

The best means, as we have already remarked, of preventing structural alteration of the viscera in intermittent fever, is to arrest the disease as soon as possible, by the administration of bark,

* De recondita Febrium Intermittentium tum Remittentium natura et earum curatione. Geneva, 1769, in 8vo. p. 196-198.

after the careful employment of regimen and blood-letting, and the removal of the causes which might reproduce the disease.

When obstructions exist, if they are ancient, or have existed one or more years, there is no hope of obtaining their resolution: some happy exceptions confirm rather than confute this proposition. In such a case, all we can do is to guard against any thing which may aggravate the condition of the patient.

If the gastric passages are but little irritated, if the obstructions have been of but few months' continuance, we may attempt to arrest their progress by administering bark with the view of putting a stop to the periodical congestions, which gradually aggravate the morbid condition of the viscera. We have sometimes the satisfaction of witnessing the disappearance of tumefactions of the spleen, liver and mesenteric ganglions, which, to all appearance, had been hopeless. Cold or hot water charged with a small quantity of salts, abounding in carbonic acid gas, gaseous and slightly saline waters, sulphurous waters administered internally and in baths, are often of great advantage, and preferable to all other deobstruants. In the course of this treatment, the local abstraction of blood from the epigastric region, from the right or left hypochondrium or anus, may become necessary. The regimen should be accommodated to the state of the stomach, and should always be severe.

When the obstructions are recent, the gastric irritation is almost always unequivocal; the viscera are painful on pressure; we must then be careful not to administer the bark before we have employed local blood-letting, regimen, baths and aqueous drinks; we must not, however, delay the employment of this medicine as soon as the state of the stomach seems capable of supporting it. In this manner we frequently prevent the development of dropsy, a formidable secondary affection, the treatment of which, cannot find a place in this work, and which almost always announces a fatal termination.

These principles of treatment should, in my opinion, take the place of those which would inculcate either the indiscriminate employment or rejection of this medicine, whenever there exist any signs of obstruction.

When chronic intermittent fevers pass to the continued type, the administration of the bark cannot but be injurious: the treatment must, in this case, be entirely palliative, until death terminates the sufferings of the patient.

CHAPTER XVI.

Of Simple and Complicated Fevers; of Essential or Primitive Fevers; of Symptomatic or Secondary Fevers, and of Humoral Fevers.

HAD I attempted, at the commencement of this work, to give an exact idea of the real value of these denominations, I could not have avoided the interminable discussions to which the subject has given rise; but in the present case, my task has become easy. Formerly, that was called a simple fever, which appeared to be exempt from all association with a local, inflammatory, bilious, nervous or verminous state, or with a fever of any other character. If the use of this term be continued, it should only be employed to designate, every irritation of a single organ, the influence of which extends to the heart; and still more properly, a primitive irritation of this organ which is partaken to a greater or less extent by the vessels.

Complicated fevers present diverse combinations of inflammatory, bilious, adynamic, &c. symptoms; that is to say, in these diseases several organs simultaneously irritated, contribute to call the sympathies into play.

The name of essential fever has been appropriated to designate acute diseases, in which there appears to exist no local irritation, to which the production of the febrile phenomena can be attributed; but as this does not appear to be the case, except when we neglect to refer the symptoms to the organs in which they manifest themselves, and to investigate the order of their appearance as well as their dependence, and do not attribute the symptoms to the organic alterations found after death, in similar cases, we may conclude that no disease merits this name.

Every physician recognises as a symptomatic fever, that in which the irritation of one or more organs is so manifest that no

one can deny its existence: now, it has been demonstrated that this is the case in all fevers, and the presumption of Sauvages is converted into certainty. *

A primitive fever is only an idiopathic local irritation, which calls the sympathies into play.

When the local irritation which excites the sympathies is itself the sympathetic effect of another irritation, it is called *secondary fever*.

An essential fever is said to be complicated with an inflammation, a neurosis or a hemorrhage, when in a fever which is not considered as depending upon a local irritation, unequivocal signs of inflammatory, nervous or hemorrhagic irritation, manifest themselves in an organ which has not hitherto appeared to be more affected than any of the others. This appearance of new symptoms, occurs sometimes in the organ, the irritation of which, hitherto unobserved, produces the febrile symptoms, and in this case, the fever denominated *essential complicated*, is only an irritation attended with febrile symptoms, and which augments in intensity; sometimes in a different organ from that, the irritation of which, produces the febrile symptoms, and in this case, there is a true complication: not in consequence of the supervention of a new disease, but owing to the extension of the disease which already existed, to an organ which had not previously been affected, or at least, not to the morbid degree.

When a fever manifests itself in the course of any morbid affection, whatever the febrile symptoms are, it is the result of a local irritation which augments or develops itself in an organ,

* The division of fevers into *essential* and *symptomatic*, is not less erroneous than that of the Galenists: they call those *symptomatic*, which are the effect of another disease, and those *essential*, which are not derived from any other disease. But since, according to the moderns themselves, 1st, fever is caused by an obstruction of the capillaries, or by irritation of the heart, or by derangement of the nerves, and since, by their own avowal, these derangements are true diseases, or a vicious state of the solids and fluids, whence arises the lesion of the functions, it follows, from these principles, *that all fevers are symptomatic*, and that *there is no essential fevers:* 2ndly, because a cause regarded as cause, is never sensible, the effect as effect, is not more so; the same remark applies to symptom considered as symptom. Sauvages, t. 1. p. 368.†

† See my article *Fever* in the Dictionnaire Abrégée des Sciences Médicales, t. vii. p. 380, Paris, 1822.

the seat of this affection, or is the result of an irritation which establishes itself in another organ.   In the latter case, the fever is truly secondary, or, if the expression be preferred, symptomatic.

Consequently, every fever is essential, inasmuch as it exists: no fever is essential, if by this we mean that it exists by itself, which signifies nothing when we speak of a disease.

It is proper to distinguish primitive from secondary fevers, on account of the modifications which the treatment undergoes from a consideration of the seat.

These principles being laid down, let us examine what are the fevers which precede the inflammations of the skin, accompany, or succeed them: those which are called *exanthematous;* fevers which manifest themselves in the course of a phlegmasia, a hemorrhage, or neurosis; fevers which develop themselves after a wound; finally, fevers which are attributed to a vitiated state of the humours.

1st, The fever which precedes for some days the erysipelas, the measles, small pox, and other cutaneous phlegmasiæ is almost always owing to gastro-enteritis: to be convinced of this, it is sufficient to observe the state of the tongue, the derangement of the digestion, and to explore the epigastrium.   This fever diminishes when the inflammation abates or ceases in the gastro-intestinal membrane, and manifests itself on the skin; when the latter is violently irritated, the membrane of the digestive organs becomes irritated anew, or the very feeble irritation which in most cases it retains, increases, and the febrile symptoms acquire a new intensity.   When the irritation of the skin has ceased, reaction no longer exists, provided the gastro-enteritis does not persist or increase.   At any period whatever of the cutaneous phlegmasiæ, the gastro-enteritis, and sometimes the simple irritation of the skin in a subject, labouring under a predisposition, may determine a formidable, or even a fatal irritation in the encephalon; derangement of the nervous system is then observed to supervene, with prostration, and if the gastro-enteritis arrives at the highest degree of intensity, the phenomena which the ancients attributed to putridity, declare themselves. When the symptoms of gastric, mucous, or bilious fever develop themselves, the sympathetic irritation of the gastro-intestinal mucous membrane can no longer be doubted. We have now

sufficiently indicated the nature of gastric, bilious, mucous, atax-
ic, and adynamic fevers, which, in the language of the present
day, supervene on phlegmasiæ of the skin, and the treatment
necessary to arrest their progress.

The bronchia, and other internal organs, frequently become
affected, either conjointly with the digestive organs, or indepen-
dently of them.

2dly, A peripneumony, a peritonitis, or a metritis, frequently
throws the patient into a profound prostration, or determines
symptoms called nervous.   For this to occur, it is not necessary
that the gastro-intestinal mucous membrane be in a state of in-
flammation; but when vomiting, diarrhœa of fetid matters, and
an acrid heat of the skin are superadded to prostration, it can no
longer be attributed to the inflammation of the lungs, uterus, or
peritoneum: there is evidently gastro-enteritis.   The same prin-
ciples, then, apply to these gastric, adynamic, and ataxic fevers,
as to those which complicate phlegmasiæ of the skin.

When one of these fevers manifests itself in the course of an
irritation called nervous, cerebral irritation very readily super-
venes, even when there is no gastritis.

The remarks which I have made in relation to the fevers
which complicate inflammation, apply equally to hemorrhages of
the lungs, of the uterus, &c.

In speaking of chronic fevers, in the preceding chapters, I
have indicated, as far as I could in this work, the points of doc-
trine relative to the connexion of chronic diseases with febrile
symptoms.

3dly, Traumatic fevers comprehend the synocha, the bilious,
adynamic, and ataxic fevers, which manifest themselves after
wounds.

The first is the direct effect of the irritation, pain, and inflam-
mation, inseparable from a solution of continuity, however slight,
affecting irritable parts: very often a sympathetic gastro-enteritis
supervenes with rapidity, and contributes to the development of
the febrile symptoms.   The constitution of the patient, and the
circumstances to which he is subjected contribute much to the
production of these symptoms.

The second is always the effect of an intense gastro-enteritis,
involving more or less the liver: there are certain wounds, such
as those of the head, which determine it more readily than

others.   It is far from being in every case, as it has been assert-
ed, the effect of a bad regimen.   Since a bad regimen had not
occasioned it before, it can, at most, only predispose to it, unless
the wounded be guilty of excess, or make use of too abundant
succulent or gross an alimentation.   Traumatic febrile gastro-en-
teritis manifests itself more frequently during the heats of sum-
mer.   When it assumes a high degree of intensity, it gives rise
to traumatic adynamic fever.

If the irritation of the stomach be transmitted to the encepha-
lon, the nervous phenomena are observed which characterize
what is called ataxy.   But these phenomena are often the direct
effect of the traumatic irritation upon the encephalon, as it is ob-
served after amputations.

It appears from the preceding remarks, that in every fever,
essential or primitive, symptomatic or secondary, and in every
complicated fever, it is important to know, not only the organs
which have suffered lesion, and those which have suffered to the
highest degree, but likewise those which have been the first af-
fected, and without the irritation of which the others would not
have suffered.

I think that it may be logically deduced from these facts, that
all essential or primitive fevers, and that all symptomatic or se-
condary fevers, are not to be attributed to gastro-enteritis; and,
therefore, that it is always important to distinguish the cases in
which the stomach and intestines are irritated, from those in
which they are either not at all, or so slightly affected, that it is
not necessary to address the curative measures to them, or, at
least, not to them exclusively.

If in all generic descriptions of fevers, we find the symptoms
of gastro-enteritis, it is not because the latter occur in all the
particular cases which have served as the basis of these descrip-
tions: it only proves that this inflammation occurs in many of
them; otherwise it would be necessary to say that cerebral irri-
tation occurs in all, because the phenomena of this irritation finds
a place among the symptoms.   It is thus, that in consequence of
a faulty method of description, and a mania for groups of symp-
toms, that nothing but general diseases, or gastro-enteritis, have
been seen in diseases altogether inflammatory and circumscribed
in their seat, but invading at different times one or several or-
gans.

If these principles are in conformity to truth, and if they are adopted in practice, we shall not so frequently witness the exhibition of medicines, in the course of fevers, without the slightest regard to the state of the organs to which they are applied; and this will be the happy result of the theoretic and practical researches of M. Broussais on the nature and seat of fevers. Physicians will then less frequently endeavour to stimulate the brain by the internal exhibition of tonics, when the principal seat of the disease is the gastro-intestinal mucous membrane; and, on the other hand, they will be less intent upon combating, in certain ataxic fevers, a gastric irritation, which does not exist, or which no longer exists, or which is only the sympathetic effect of a cerebral irritation. The progress of observation renders the consummation of these hopes every day more probable.

Finally, Whence is it that, in the year 1830, we are reduced to the necessity of combating the errors of the middle ages? It is to be ascribed to the nature of the human mind, which advances but slowly in the road of truth, and by many and circuitous paths, which, returning incessantly to the point of departure, seem to render illusory the progress of science, manners, and institutions.

That at a time, when, from the imperfection of anatomical science, the human body was considered by the most learned phycians as a sort of machine containing liquids, in which life and its functions existed, and that when all diseases were attributed to the superabundance, penury, and alteration of these fluids, fevers were explained by this absurd theory, and that *humoral fevers* were then admitted, is not astonishing. A fever was cured after hemorrhage; the blood was then considered as its cause; another ceased after a vomiting of porraceous matter, and was, therefore, attributed to the bile; another after a mucous expectoration, and consequently the phlegm was its origin; another proved fatal, notwithstanding copious dejections of black matter: and here the atra-bile had not been evacuated in sufficient quantities, and the material cause of the fever not having been eliminated, the patient must necessarily perish. This mode of reasoning justified itself by the maxim, so common among the ignorant, and in the imperfection of knowledge too frequently applied even by the learned, *Post hoc, ergo propter hoc.*

But it is certainly astonishing, that, at the present day, men, among whom are to be found some of the most intelligent, should be pleased, without any alarm, at the deluge of errors with which the humoral theory had absolutely drowned the science of diseases, to repeat unnecessarily that there is something true in the ancient humoral pathology, that certain fevers cannot be referred to any organ, and that, therefore, the inference is probable that they affect the humours, and that in this case the fever is general.   It is certainly not very consistent with good logic, to say that there is something true in a doctrine, without pointing out what there is in it conformable to observation and reason: we cannot, consistently with correct physiological views, consider the fluids as any thing but what they are made by the organs.   When foreign matters are introduced, they are no longer themselves, and this does not occur unless some organ is affected; ignorance of the organic seat of a fever does not authorize us to consider a fever as seated in the humours, in which hitherto no disease, properly so called, has been demonstrated.   When it shall have been proved that a humour may undergo a spontaneous alteration, like cider in a barrel, as it has been said to do, by one who is better entitled to the name of technologist than physiologist, it will still remain to determine what organs receive the febrifacient impression of this humour.   It will, besides, be necessary to demonstrate that the alteration of a whole humour, of the blood for example, without the alteration of any organ, constitutes a disease of the whole body, as though the organs formed no part of the economy.*

An abundance of blood, resulting from an energetic alimentation, may sur-excite the heart, lungs, brain, and uterus; the presence of bile may irritate the digestive passages; that of the urine, the bladder: fever may be the result; but what do we know of the effects of the alteration of these liquids, or of the alteration itself?

We call upon experimentalists, anatomists, chymists, and practitioners to endeavour to penetrate these mysteries, by experiments, dissections, chymical analogies, and clinical observations; not by hasty conclusions, unfounded hypotheses, and reveries, which might afford matter of laughter to the public, were they not couched in the unintelligible jargon of pretended science.

* Gerdy, Transactions Médicales.

Nothing is more to be suspected than that ardent desire to anticipate the progress of knowledge, which frequently betrays the finest intellects into the adoption of errors.

In proportion to the progress of pathological anatomy, humoral fevers have become organic diseases; and even Pinel wished to banish every Galenical explanation from his theory of fevers. If we are bound to reject no fact, much more are we bound not to advance hypothesis before certain knowledge. No one, at the present day, flatters himself with the idea that he has penetrated the ultimate secrets of nature, in relation to the state of the solids, either in a pathological or physiological condition; but we at least possess, in relation to these parts, an imposing mass of facts, derived from clinical observation and dissection.

Can the same be said of the fluids? Symptoms only lead to suppositions; autopsy has taught us nothing that was not known at the time of Mondini; chymical analysis has shown only similarity of composition, and rarely any difference; the slight alterations of the blood with which we are acquainted not being discoverable by any certain signs during life, can furnish no principles in pathology, and can be the subject of no indications in therapeutics. They can, therefore, have but little interest for the practitioner, who adopts no theories but those which are indispensable for the classification of facts, and the study of the organs, which permits no fact to be lost, has the farther advantage of placing them before the eye in all their nakedness.*

* Nosographie Organique, tome iii. Alterations du Sang.

CHAPTER XVII.

Of Fever.

AFTER having sought in a physiological study of the causes and symptoms of the fevers described by the most celebrated pyretologists and in the results of post mortem examinations, positive data in relation to the nature and seat of these diseases, it is proper to study fever in general, to determine in what it differs from inflammation, and to establish the most general rules of its treatment.

Should it be objected, that fever is only a word, and that inflammation is a fact, I would answer, that if fevers are only phlegmasiæ, the word *fever* expresses a fact as well as the word inflammation, and that the subject of the present chapter is a comparison of the inflammations which have received the name of fevers, with those to which no one refuses the name of phlegmasiæ.

Galen and his numerous commentators have defined fevers— a heat contrary to nature, developed in the heart, and which, departing from this organ, diffuses itself by the spirits and the blood, by the arteries and veins, through the whole body. This heat is sometimes *excessive*, and produced by the simple augmentation of the native heat inherent in the animal; and sometimes the product of a putrescent, malignant or pestilential matter, developed in the living body or introduced into it.

To constitute fever, it was considered necessary that this heat should be durable and involve the whole body. Its characteristic signs were—a quick, frequent and sometimes unequal pulse, languor, dejection, a sense of acrid heat of the surface, or only an unpleasant sense of heat internally. Avicenna and Fernel made the important remark, that this heat might arise in other parts besides the heart, although it always involved this organ at last.

This theory offers us, on the one hand, all that could be learned in the infancy of medicine from an observation of the symptoms, and, on the other hand, the hypothesis of *innate*

heat and of *heterogeneous matters* developed spontaneously in
the organism or introduced into it, that of the *spirits*, of *putri-
dity* and of *malignity*. The sense of heat experienced by the
patient, the re-establishment of the health after evacuations, the
empty state of the arteries after death, certain phenomena com-
mon to the humours evacuated in inflammation, and to animal
matters in a state of putrefaction, the occasional occurrence of
death in the midst of symptoms by no means alarming, were
the facts upon which were based these hypotheses for so many
ages, the inexhaustible source of sterile disputes. But if the
Galenists erred in considering fever as a general disease, they at
least suspected its true nature, since they attributed it to *heat;*
they were acquainted with the part which the heart performed
in this disease; and some of them perceived that this organ was
not always the first affected. Galen himself attempted to deter-
mine the particular seat of many species of fevers.* More could
not have been effected in the infancy of physiology and anatomy,
and when pathological anatomy did not even exist.

The fundamental ideas of Galen, of the Arabians, and of Fer-
nel have, until the present period, been surcharged with innu-
merable subtleties rather than modified. Thus when, in the fif-
teenth century, Paracelsus attributed fever to the combustion of
sulphur and nitre, he only referred to an imaginary cause the
heat, which, according to the Galenists, constituted fever. Ga-
len had found the rudiments of his theory in certain books of
the descendants of Hippocrates; Paracelsus, in attacking him,
commenced the monstrous application of chymistry to patholo-
gy, which has continued even to the present day.

Versed in the writings of Hippocrates, Galen and Paracelsus,
Van Helmont made a singular mixture of the doctrines of these
celebrated men. Without regard to the structure of the organs,
he attributed fever to the terror, the shock, the deranged move-
ments of the archæus, and placed the seat of the disease in the
duodenum. They were then better acquainted with the part
performed by the stomach and small intestine in the production
of fever; but the imagination of physicians, swayed by absurd
hypotheses, could not pay much attention to this gleam of truth.
Yet in the midst of these humoro-chymical errors, the inflam-

* See my Historical Researches on Fevers. Paris, 1822, in 8vo.

matory character of fevers was not entirely unknown, as may be seen in a work, otherwise of little importance, of Henry Screta Schitnor de Zavorziz;* and even in those of Sydenham, who, as remarkable for his powers of observation as he was for the errors of his theory, attributed fever to an effort of nature to expel by fermentation the morbific cause.

Borelli attributed this disease to an irritation of the heart, owing to the acridness of the nervous fluid. Bellini to the stagnation and thickening of the blood in the capillary net-work, the effect of the irregular movements of this liquid.

Chirac, an admirer of the chymical and mechanical theories, beheld in fever, at one and the same time, the effect of the fermentation, the stagnation and irregular movement of the blood; but to him belongs the credit of having first positively asserted that we could arrive at a true knowledge of disease only by post mortem examinations.†

Stahl demonstrated, that in fever the blood is not in a state of stagnation: he attributed this disease to an excitation of the tonic movement of the solids; he thought that this increased action was provoked with a salutary object by the soul, and he admitted no difference between fever and inflammation.

Glisson had long since published the fine and pregnant idea of the irritability of the organic tissues, when F. Hoffman attributed fever to a spasm of the periphery, which pushed the blood to the internal parts; he established no other difference between inflammation and fever except the greater extension of the latter. He declared that all the subjects whom he had seen perish in fever, had died in consequence of an inflammation of the stomach, the intestines and meninges.

Bordeu, although he contributed to the rejection of many luminous ideas of Chirac, yet admitted the analogy of fever and inflammation. He was the first to perceive the utility of naming each fever according to the organ most affected.

A disciple of Glisson, Hoffman, and Cullen, Brown attributed the intermittent and continued fevers called nervous to astheny, and the synocha to sur-excitation. To these fundamental ideas may be referred all those which have served as the text of the

* De Febre Castrensi Maligna seu mollium Corporis Humani partium Inflammatione dicta. Bale, 1716, p. 26.

† Op. cit. tome i. ch. ii. art. 10 et 11.

innumerable works on fever, published from the time of Galen to the commencement of the present age. Among these ideas, those which were most conformable to information obtained the fewest partisans: no one acquainted with the history of pathology can be astonished at the disgust which Pinel manifested to the theories of the schools at the time of the publication of his *Nosography*.

This professor did not, however, think it contrary to the proper method of study in natural history to attribute certain fevers to irritation, others to weakness, and others to the irregularity of the functions: it is probable that he would not have blamed those of his predecessors who had written on fever in general, if he could himself have attained to a general idea, which might embrace the three proximate causes, by the aid of which he explained the production of all fevers.

It is at the present day demonstrated, that all fevers are owing to a local irritation of greater or less extent; that if the weakness sometimes precedes this irritation, accompanies it in another organ, or follows it, the irritation is the only source of the symptoms of reaction and the premature source of the symptoms which seem to indicate weakness; finally, that we should never assign the first rank to those symptoms which really denote astheny of an organ, because this weakness either does not constitute the disease, or it is the effect of the irritation which constitutes the latter.

I shall not attempt to prove that the acceleration and force of the pulse and heat of the skin are not signs of weakness; the time when such errors prevailed is long passed. But among those physicians who admit that the symptoms of fever, are, if not always, at least most frequently the effect of a local irritation, and especially among those, who, while they acknowledge the extreme frequency of this irritation, still assert that it is general, there are some who deny its analogy to inflammation. This error would be unimportant, did it not tend to give an unhappy direction to the treatment of fever. It is therefore necessary to enter into some details upon this subject.

In what does inflammatory differ from febrile irritation? Is it in its causes? But the causes of both are the same, and, were they different, it should be in the modifications undergone by the organs that a proof of their difference should be sought. If we compare the symptoms of fever with those of inflammation

in the first, second, or third degree of these diseases, we per-
ceive that these symptoms are the same; there is but a single
point of difference: it is, that the local or direct symptoms are
less intense, less manifest, whilst the sympathetic or remote symp-
toms are relatively more prominent in the first than in the second.
It appears, then, that fever is generally less intense than inflam-
mation: but this is only apparently the case. If the sympathetic
symptoms are very marked in continued fevers, even when the
local symptoms are but slightly so, it is because the irritation
then resides in a very excitable organ, of great influence in the
economy, or that the organs which feel the influence of the or-
gan primitively affected, are very excitable. Nevertheless, there
are cases in which the irritation is not very intense, but of great
extent, invading many organs important to the maintenance of
life. Because the sympathetic symptoms are always greatly de-
veloped in fever, let us not conclude that the irritation which
constitutes it is of a different nature from inflammation; for we
continually see slight though unequivocal inflammations deter-
mine sympathetic symptoms of a more marked character than
those of a more intense inflammation.

If febrile irritation be sometimes less intense than inflamma-
tory irritation, let us not be surprised that it leaves in the or-
gans traces less profound, and which sometimes even disappear,
at the moment when vital action ceases. Let us also remember,
that if fever has appeared, during a long series of ages, to leave in
the organs fewer traces of inflammation, it is because physicians
sought in the mucous and serous membranes, in the arachnoid
membrane, for example, disorders as profound, and as evidently
inflammatory as those found in the cellular tissue after phlegmon.

In vain is the cure of certain fevers, under the influence of to-
nics applied even to the irritated organ, brought forward as dis-
proving the analogy of fever and inflammation: were these cases
as numerous as they are uncommon, they would prove nothing
against our opinion. Inflammation is also cured by stimulants
applied to the organ in which it is seated. But we know, by a
treatment so irrational, we hazard the aggravation of this mor-
bid state, and the destruction of the inflamed tissue. This un-
doubted fact should not be lost upon the physician, when called
upon to treat fever: to the presumption of the ephemeral success of
empyricism, let him prefer the satisfactory certainty that he has

only made use of those means which the nature of the disease points out. Would that the innumerable deaths which take place in the course of epidemics, notwithstanding the copiousness of our materia medica, and which, at least, evince the efficacy of tonics; would that the recent progress of pathological anatomy might correct the error of those physicians, who, while they celebrate the vis medicatriæ naturæ, act as though they did not believe in its existence, and very frequently do more mischief than if they had remained tranquil spectators of the combat, in which they believed themselves obliged to take part, at the same time that they protest their attachment to the method of expectation.

The intermittent character of fever proves nothing against its analogy to inflammation, since inflammation itself is frequently intermittent. That irritation in intermittent fevers is sometimes less permanent, less profound, of shorter continuance, and of greater mobility than inflammation, may be granted, without denying the identical nature of these two morbid conditions, provided we admit that it is at least as acute and not less fatal, although more rapid in pernicious intermittent fevers.

To the authors who behold in fever only a nervous irritation, it is sufficient to answer that it is nervous when it resides in the nerves or in the brain.

As to those who pretend that fever is only a secretory irritation, it is sufficient to refer them to the Galenical theories, which they expect to revive under the garb of modern physiology.

As long as the analogy of fever and inflammation has been, if not demonstrated, at least suspected, that is to say, from the time of Galen until the end of the last century, physicians, notwithstanding their humoral, chymical, and mechanical theories, have, for the most part, recognised the utility of blood-letting in the treatment of fever; all would have seen that it was indicated in this disease, even when it appeared to be the result of putridity and malignity, had not their minds been preoccupied by these erroneous theories. Some among them did not even fear to avow that blood-letting was one of the most appropriate methods of preventing putridity and malignity, and of arresting the progress of these imaginary morbid conditions of the humours.

Brown and Pinel limited, to such a degree, the employment

of blood-letting, that there was reason to regret the time when their predecessors, persuaded of the necessity of taking blood, with a view to diminish the plasticity of this fluid, and to facilitate the circulation, did not fear to resort to this powerful remedial measure.

To complete the history of fevers, profound researches are yet to be made with regard to the complication of encephalic, thoracic, abdominal and cutaneous inflammations, as well as those of the muscles, the synovial membranes, and fibrous tissues, with irritation of the heart. I have attempted to point out this deficiency, rather than supply it.

Broussais has done much towards the overthrow of the ancient pyretological doctrines, but he has only described the gastritis, to which the name of fever has been given. As Pinel neglected to treat of complicated fevers, so has M. Broussais neglected complicated gastritis.

It remains to determine the frequency and the diagnosis of the inflammations of each organ, and of every part of the body in *fevers*. Shall it be said, that it is sufficient to be acquainted with the signs of these different inflammations, to recognise them in every case? This would be to elude the difficulty. The signs of simple and intense gastritis were known before the time of M. Broussais, and yet it was not recognised in *fevers*.

The time has arrived, when all practitioners, particularly those who practise in hospitals, and especially in countries often desolated by epidemics, should investigate with care the symptoms of complicated irritations, which are announced only by symptoms, hitherto grouped under the name of *fevers*.

Many facts are wanting towards the establishment of the treatment of these diseases on a solid foundation; these facts cannot be obtained, except through the united efforts of physicians in every country.

At the present day, when the nature and seat of fevers are no longer a mystery, and the advantages and disadvantages of blood-letting are positively ascertained, we know in what cases it is indicated, and where the application of leeches is preferable. Hereafter, the efforts of practitioners must be directed, not only to an investigation of the cases in which emetics and tonics may be employed without danger in the treatment of fevers; but, likewise, to the determination of the place in which blood-

letting should be practised, or leeches applied; the quantity of blood which should be taken, the number of bleedings which should be practised, and the number of leeches which should be applied in proportion to the intensity, the seat, and extent of the irritation, the period of the disease, the susceptibility and age of the individual, and the circumstances which have occasioned the disease. They will endeavour to ascertain with greater certainty than has hitherto been attained, the cases in which it is necessary to treat intermittent fever with bark, and with this in view, they will remember that between fever of this type, and intermittent inflammation of an unequivocal character, the only difference is in the seat, and sometimes in the intensity of the disease. And, finally, it will be important to study the powerful influence of an absolute, or, at least, very rigorous diet in the treatment of fever, as well as the effect of derivative stimulants applied to the skin, or to the mucous membrane of the great intestines. Important results would doubtless be obtained, if physicians, instead of limiting themselves to the observation of symptoms, would carefully engage in post mortem examinations, and submit the facts which they might collect to a physiological analysis, which alone can place the science of medicine on a firm basis.

The declamations of certain persons, against the application of physiology to pathology, only proves that they are aware of their incapacity to attain reputation by direct means, and that to attain their ends, they hesitate not to adopt the most indirect methods.

For some time, it has been common to repeat that the physiological doctrine has fallen into oblivion, and this at the very time when it is the source of all that is rational in the writings of its detractors, and when every practitioner, professor, and writer, draws largely from it in the exercise of his profession, in teaching and in the investigation of principles. A most singular fact, of a doctrine to make its way against all attempts to obstruct its progress, and to compel its detractors to borrow its principles, with a view to exhibit an appearance of novelty.

THE END.

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the hands of the student, may be said, without invidiousness, to
fall very far short of presenting the English reader with such a
compendious survey of the actual state of BRITISH and FOREIGN
MEDICINE as is absolutely required by him. Some of them are too
limited and too superficial in their character; others are too volu-
minous, too intricate in their arrangement, and too indiscriminate
in their contents; and all are open to the serious objection of fail-
ing to represent the improvements and discoveries by which the
scientific labors of the members of the medical profession, in vari-
ous parts of the world, have been rewarded since the commence-
ment of the present century.

It is the object of the CYCLOPÆDIA OF PRACTICAL MEDICINE to
supply these deficiencies, and to meet the acknowledged wants of
the medical reader. Such ample arrangements have been made
for effecting these important objects, as enable the Editors to lay
before the public the nature and plan of a publication in which
they have endeavored, by dividing the labor of a work including
subjects of great diversity, and all of practical importance; by
combining the valuable exertions of several contributors already
known to the medical public; by excluding mere technical and
verbal explanations, and all superfluous matter; and by avoiding
multiplied and injudicious divisions; to furnish a book which will
be comprehensive without diffuseness, and contain an account of
whatever appertains to practical medicine, unembarrassed by dis-
quisitions and subjects extraneous to it.

In pursuance of this design, every thing connected with what is
commonly called the PRACTICE OF PHYSIC will be fully and clearly
explained. The subject of PATHOLOGY will occupy particular at-
tention, and ample information will be given with relation to PA-
THOLOGICAL ANATOMY.

Although the excellent works already published on the subjects
of MATERIA MEDICA and MEDICAL JURISPRUDENCE can be so readily
and advantageously consulted, as to make the details of those
branches of science uncalled for in the Cyclopædia, it belongs to
the proposed plan to comprise such general notices of the applica-
tion and use of medicinal substa⸺ a

general account of each class into which they have been divided, as of Tonics, Narcotics, &c.; and to impart, under a few heads, as Toxicology, Suspended Animation, &c. such information connected with Medical Jurisprudence as is more strictly practical in its character.

It is almost unnecessary to say that a work of this description will form a Library of Practical Medicine, and constitute a most desirable book of reference for the general practitioner, whose numerous avocations, and whose want of access to books, afford him little time and opportunity for the perusal of many original works, and who is often unable to obtain the precise information which he requires at the exact time when he is in greatest need of it.

The Student of Medicine, who is attending lectures, will, also, by means of this work, be enabled, whatever order the lecturer may follow, to refer, without difficulty, to each subject treated of in the lectures of his teacher; and it is presumed that Lecturers on Medicine will see the advantage of recommending to their pupils a work of highly respectable character, the composition of original writers, and which, it is hoped, will neither disappoint the advanced student by its brevity and incompleteness, nor perplex those commencing their studies by an artificial arrangement.

But, whilst the Editors have felt it to be their duty to prepare a safe and useful book of reference and text-book, it would be doing injustice to those by whose co-operation they have been honored, not to avow that they have also been ambitious to render the work acceptable and interesting to readers who have leisure and inclination to study what may be termed the Philosophy of Medicine: whatever is truly philosophical in medicine being also useful, although the application of the science to the art requires much reflection and sound judgment.—For the assistance of those who desire to pursue a regular course of medical reading, ample directions will be given when the work is completed; and for those who may be anxious to prosecute any particular subject to a greater extent than the limits of the Cyclopædia permit, a list will be given, in an Appendix, of the best works relating to each.

The means of accomplishing an undertaking of the importance of which the Editors are fully sensible, will, doubtless, be appreciated after an inspection of the list of contributors who have already promised their co-operation. It is, of course, desirable that a work of this kind should be characterized by unity of de-

sign, but, at the same time, as each author will, generally speaking, contribute his knowledge and his opinions on the subjects which have occupied his chief attention, the superiority of the whole performance to any thing which the mere labor of compilation could accomplish will be unquestionable. To each important article the name of the author will be appended.

The acknowledged want of such a publication, already alluded to, and the extensive encouragement which Dictionaries of a much greater extent have met with in FRANCE and GERMANY, although some of them are very unequal as regards the value of different parts, and encumbered with much that is absolutely useless, afford sufficient reason to hope for the success of a work in which what is valuable will, as much as possible, be separated from what is merely calculated to distract the attention, and to frustrate the inquiry, of those who study the science of medicine with a view of regulating and improving its practice.

In order to insure this success, it is the desire, and will be the endeavor, of the Editors to make the CYCLOPÆDIA OF PRACTICAL MEDICINE not only obviously useful to those for whom it is more immediately intended, but so creditable to BRITISH MEDICAL SCIENCE as to deserve and to obtain the patronage of all classes of the Medical Profession.

In the American edition, all interesting details on the subjects of MATERIA MEDICA and MEDICAL JURISPRUDENCE, omitted in the original, will be supplied.—Much new matter in relation to AMERICAN SURGERY and MEDICAL PRACTICE will be introduced; and for this ample materials have been promised.—Full explanations will be given of all medical terms, especially those which modern discoveries have introduced into the nomenclature of the science, and without a knowledge of which, many of the works of the present day are almost unintelligible.—At the termination of each article the most copious references will be given to the best writers on the subject, so as to enable the student who desires it, to pursue his investigations with the least trouble and the greatest advantage.—Finally, the whole work will be carefully revised, and such additions made as may tend to increase its value, and to render it, what it is desired it should be—A COMPLETE LIBRARY OF THE MEDICAL SCIENCES.